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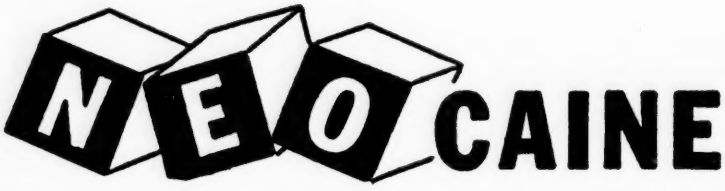

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The Journal of the
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Editorials

The Medical Textbook of the Future

IN THE olden days—and not so long ago at that—the problem of medical education was solved in a very simple manner. The prospective physician merely apprenticed himself to some local medical celebrity and then proceeded to prosper, for a variable length of time, on warmed-over gruel and the crumbs from the doctor's table. Meanwhile he pursued a rather haphazard course of study which made him an ex-officio party of the first part to whatever was perpetrated in the name of medical practice in the neighborhood. With the passing of time he might expect to awake some day to find himself the doctor of the community by reason of his mentor's demise. In instances where the old doctor lacked sufficient sportsmanship to die, there remained but one course for the apprentice to pursue, and that was to move to a less densely populated portion of the countryside. There, in the hinterland, a new shingle was raised and, for all practical purposes, another doctor had been born. Those who deemed it their duty to spend more time in preparation for such arduous tasks as country practice involves supplemented this personal instruction with a visit to the leading clinics of some nearby large city. At the time we are speaking of,

this meant New York, Philadelphia, Boston or Baltimore.

Such was the state of medical education in this country only a little more than half a century ago. Since then, of course, refinements and elaboration in medical education have occurred, as indeed they have in education in general. Along with the establishment and the continuous general improvement in the caliber of medical schools, there came a revival of the habit of visiting clinics, though on a much greater scale. All the leading clinics of Europe were at one time thronged with medical students from America. More recently, the superiority of the medical clinics of the Americas has been recognized and now the flux is toward these from all over the world. The object of all such pilgrimages is to see as many and as great a variety of cases of disease as is possible, as well as to observe the various methods employed in treatment.

In the eyes of the modern student of medical education, such medical training is now regarded in the dead—even if not buried—class. The intensive training obtainable from a well organized and correlated postgraduate course is certainly to be preferred to the lackadaisical lapping of medical knowledge obtained from traveling from clinic to clinic with a hope of seeing the cases that *happen* to be there. Considered entirely apart from its pleasurable features, such travel to clinics abroad is highly inefficient, both from an economic standpoint and from a standpoint of special medical educational value. The immense amount of time involved, not to mention expense, the neglect of home interests and the alluring distractions (which no one resists too successfully) all consipire to render the procedure of questionable value.

It is in striking contrast with this that we note the unquestionable and satisfying results obtained by employing the motion picture film as a method of educating medical students. Cases are shown, instruments demonstrated, and every modern method of treatment is shown by means of moving pictures. All surgical operations are capable of being shown by this means. Not only are actual pictures of the operation employed, but by the use of animated diagrams the most intricate procedure and operation may be shown in great detail, and with a clarity that it is not possible to obtain by any other method.

The dissection of an entire human body—a tedious process taking months of careful work—is shown in faithful detail in motion pictures in a little over one hour. Moreover, without the necessity of again going through the dissection, the process may be shown repeatedly until the student is entirely familiar with its detail. In this way, from the seat of a comfortable chair in the lecture hall, he may learn what otherwise would require months of messy work on a malodorous cadaver. Thus, through the agency of motion pictures, the anatomy and physiology of the body in health, the characteristic appearance of particular cases of disease, and each step in the plans for their treatment may be presented.

If a student is slow to grasp, the pictures may be run two or more times. If an interesting phase is observed, the picture may be stopped and started again at will. For example, in a series of pictures there are to be observed all the interesting intestinal and rectal cases that have come through a certain hospital in the last nine years. How else could a nine-year clinic such as this be viewed in a little over an hour? This is all the more remarkable considering the fact that the patients portrayed have almost all passed from view, either by reason of cure, removal or demise.

Aside from the immense economy of time and effort, the particular features by reason of which the employment of motion picture film is most especially adapted to the teaching of medical subjects, are its ready accessibility and its permanency of form. To this we may add the fact that it is a practically indestructible record which may be used time and time again without any more exertion than the printing of new positives from the original negatives. Availability is a very important feature in the teaching of medical subjects. For instance, a physician recently dropped into a clinic and said that he was particularly interested in a certain rare form of rectal disease and wanted to see whatever he could on that subject. As it happened, the condition was of such rarity that there were no cases in the hospital at that particular time and, for that matter, there had been none for over a year. Yet, by the simple process of the motion picture film, this man was able to view over twenty such cases in a short period of time. When I tell you that these constituted all the cases that had come into the hospital for some eleven years, you will readily realize the important role that the motion picture film plays, or can play, in keeping striking clinical cases indefinitely on ice.

The clearness and simplicity of the motion picture portrayal of a clinical condition stands in direct contrast to the totally inadequate view that a medical student can obtain when he attempts to observe an operation or study a case from a seat in the amphitheatre. The students and observing physicians are seated row upon row in a semi-circular manner on benches whose distances range from twenty to fifty feet from the field under observation. When you consider that such field is at best six to eight inches square, and that even this is encroached upon by operating hands and instruments, you can well imagine that the actual view possible is very small indeed. Contrast this, if you will, with the fact that an operative wound photographed and projected upon the screen shows an area six by nine feet, instantly visible to everybody, and so complete in its clearness and abundant in its detail that accurate observation cannot be avoided.

We have noted so far the great economy in time and effort resulting from putting medical educational facts into motion pictures, and furthermore have dwelt upon the superiority of such a record from the standpoint of ready availability and repeatability. But I believe that perhaps the most important virtue of the method lies in that extensive flexibility which permits constant additions, corrections or subtractions, and which makes it possible to keep the record constantly up to date and thoroughly complete. Moreover, this same flexibility permits the rearrangement of material assembled, so that it may be correlated along the lines of a logical presentation of the facts in any subject in the vast field of medicine.

The foregoing facts are now widely recognized by medical educators, and also, to an increasing extent, by the profession in general. Excellent films on surgical subjects in all the specialties are abundant; there are a great many interesting neurological studies, instructive dermatological films in color, and even — in the field of embryology — elapsed time films to exhibit speed-up biological processes.

These films, in toto, constitute the medical text-books of the next generation. They constitute a new form of medical literature, sprawling in its extent, but intrinsically capable of organization into the most dynamic and valuable educational reservoir the profes-

sion has ever had at its disposal.

Now is the time to utilize this material and to direct its use to the common good. The International College of Surgeons has within it many of the pioneers and a still larger number of the progressive men of medicine who have been collecting this material laboriously for some years past. The college has dedicated itself to the task of reviewing, classifying and cataloguing the films available. To aid this extensive and worthwhile project, anyone possessing suitable films is requested to write to the author for details as to how his films may be listed.

The Board of Review of the College is trying to render a service; it is not seeking to impose censorship. All suitable films reviewed will be listed in the Journal of the International College and will be granted the use of a trailer indicating approval. By the continued cooperation of the profession, this Medical Film Library can increase its size and usefulness. The owner of the film retains possession of his film: the College merely acts as an exchange bureau which will make known the existence and attributes of the film.

All of these films were originally made for service as well as for record: hence the author and the professions alike will benefit by the increased distribution given the film. No book could ever achieve popularity and extended use if it were not known to exist. Let us, therefore, uncork the good medicine we have for the benefit of medical education.

J. F. MONTAGUE

Suture Instead of Ligature of Injured Blood Vessels

APPLICATION of the blood vessel suture was simplified and perfected about forty years ago by the researches of Carrel.

The practical application of this procedure was demonstrated during the first World War. Von Haberer stressed the importance of early suture of the blood vessels in the treatment of all injuries; before the end of the World War he had reported 200 cases of blood vessel injuries treated by suture, with but one failure. According to reports, it has been used extensively by the Axis surgeons in the present totalitarian conflict.

In 1913 "Blood Vessel Suture" was the subject of a symposium held during the session of the International Congress of Medicine in London. There was, however, during the first years of the World War no recorded effort made by the Allies to adopt the use of the suture instead of ligature for the repair of blood vessel injuries sustained by missiles of war. The objections raised were the difficulty of technic and the impracticability of procedure because most war wounds were contaminated and infected. These objections were controverted by a successful series of blood vessel sutures which I performed in 1917 at one of the British Casualty Clearing Stations.

Observations made during the first World War indicate the importance of early repair by suture instead of ligature. This was further emphasized because ligature of either the popliteal or the posterior tibia was found to be followed, almost invariably, by gas gangrene necessitating amputation.

The argument that blood vessel suture

entails unusual difficulty should be refuted. The procedure requires some delicacy of technic but can be mastered easily by one with preliminary practice in either the research laboratory or the autopsy room.

The advantages of blood vessel suture instead of ligature have been recognized by the central powers and have been used extensively by the Axis surgeons. They should be recognized and adopted by the surgeons of our forces.

The wounded reach the advanced operating centers within 24 hours before a visible purulent discharge develops. The repair of the injured blood vessels may be undertaken with the expectation that the circulation will be restored without thrombus formation.

During the first World War, I covered the line of suture with a muscle or facial transplant to protect the delicate sutures from the Dakin dressing. This can now be dispensed with. The postoperative care is now simplified by sprinkling the operative area with sulphathiazole powder. The suture is readily carried out with the use of fine cambric needles threaded with fine silk or cotton previously sterilized in mineral oil. The exposed injured vessel segment is temporarily closed above and below the rent with strips of tape or rubber bands. Clots are washed away with the aid of a piston or bulb syringe, using saline or Ringer's solution. The overhanging adventitia or outer layer of the vessel is trimmed away from the edges of the wound. During the process a few drops of mineral oil should be applied to prevent drying of the intima. A simple overhand suture through the media and intima completes the repair. As the temporary compression tapes are removed, it is advisable to apply slight pressure with a pledget of gauze moistened with mineral oil. A spurt due to some unevenness of the suture is readily controlled by an extra suture, introduced at that point and tied.

Catgut is not suitable; vegetable oil and wax have no place in the practice of blood vessel suture because of their tendency to disintegrate during sterilization.

When a large artery has been completely severed, the ends are usually found curled up and retracted. Three guide sutures should be introduced approximating the severed ends. This will be followed by relaxation, and tendency to retraction of the severed segments will be overcome.

The circular suture may then be completed without any appreciable difficulty. The early restoration of the circulation will obviate the danger of gas gangrene. Furthermore, when suture of an injured artery is completed, the dangers of aneurismal formation with neurovascular and cardiovascular complications are averted.

The use of Heparin or other anticoagulants recently suggested by some surgeons, has, in my opinion, no place in the treatment of blood vessel repair on soldier or civilian. Loss of blood calls for blood transfusion rather than the administration of anticoagulant media.

CHARLES GOODMAN.

Now

THE integrity of Medicine is one of the great issues at stake as the world strains for a glimpse of the peace to come.

Because anything else would be unthinkable, we must have faith that right will prevail in the contest of arms.

Upholding that faith, American Medicine is sending her sons forth to sustain the armed forces on land and sea.

But there can be no victory that has *no* vision beyond the laying down of arms. Peace must come again, but if it should overtake us and find us unprepared, how then shall we redeem the trust that humanity reposes in us?

To those of us whose service will be upon the home front falls the great duty and the great privilege of sustaining our colleagues summoned into military service.

"What are we going to do when we return?" they cry. "To whom shall we turn for the restoration of skill and our rightful share of the progress gained during our absence?"

In these questions we hear a challenge that the United States Chapter of the International College of Surgeons answered with a glorious unanimity at the recent assembly in Denver.

Not for itself but in pursuit of the selfless aims that it shares with all who espouse the cause of Medicine, the Chapter has provided a co-operative technic for re-establishing surgeons in the private practice of their calling.

The Chapter stands on record as offering its Fellows, Members, Associate Members, and interested non-members a post-war period of refresher study with Fellows of the College.

Applicants for this assistance will be assigned by the Board of Governors to a suitable mentor. In the status of observers, they will receive guidance in pre-operative diagnosis, gross pathology in the operating room, operative technic, post-operative follow-up, and microscopic pathology with a hospital pathologist in the cases that have been observed.

This, we are confident, will serve to close the gap between the narrow limits of military medicine and the larger demands of private practice. The merits of the plan are obvious and require little comment beyond the observation that the cumbersome method of group instruction will be avoided in favor of a more direct and intimate technic under complete personal supervision.

The opportunity will be offered to the Associates and Members of the College twice a year without charge.

One consideration remains in which the Chapter leadership looks confidently toward the membership. Co-operation is the essence of the plan. The eager response at Denver is a token that co-operation will be given wherever it is asked.

Available Fellows are asked to pledge their support **now** and to begin their preparations **now** for the effort which lies ahead.

Communications addressed to the Business Secretary—Mr. Ralph E. Osborne, The Drake, 1512 Spruce Street, Philadelphia, Pa.—will be recorded and passed to the Board of Governors.

The Use of the Dicoumarin Preparation*

A PRELIMINARY REPORT

J. W. McROBERTS, M.D., F.A.C.S.
SHEBOYGAN, WIS.

BEFORE the turn of the century, the use of aseptic technique and the introduction of anesthesia had given surgery its greatest impetus. In every decade since that time, surgery has followed a brilliant course. For many years the lowering of the mortality and the morbidity attending surgical procedures was due in large part to the introduction of new operations or technics. Within the past few years there have been few, if any, original operations, and the technic of the older ones has been very well established. In spite of this, the mortality and morbidity statistics have continued to decline. These better results are due in large part to better preoperative and postoperative care. The use of intravenous solutions for control of water balance, the use of duodenal suction apparatus, and the administration of oxygen are a few of the procedures that have made major surgery less hazardous.

During the past year or so, several new agents have been added to our armamentarium, and at this time I should like to discuss two of them, namely, Heparin and Dicoumarin.

HEPARIN

The product now known as Heparin was discovered by McLean[1] in 1916. This anticoagulant substance was prepared from dog's livers. Unfortunately, the original product was too toxic for use in clinical medicine. In 1934, Charles and Scott,[2] working in Best's Laboratory in Toronto, prepared a new and less toxic form of Heparin. This product is now available and is administered by continuous intravenous injections. About 20 cc. or 2,000 units is placed in a liter of physiological saline solution and administered at the rate of about 26 drops per minute. The effect of this substance is to produce a prolonged and constant lengthening of the coagulation time of the blood.

Although there may be several factors concerned in the production of postoperative thrombophlebitis, the cause is of no significance if the coagulation time of the blood can be prolonged. Murray,[3, 4] of Toronto, has recommended that the coagulation time of the venous blood should be kept at a level between 15 and 20 minutes. In order to do this, it is necessary to regulate the administration very carefully according to the coagulation time of the blood. There is a great danger of discontinuing the use of this substance too early. If the patient has developed the signs of a pulmonary embolism, it is necessary to administer Heparin for a period of not less than ten days.

Priestley and Essex[5] report that 36.2% of patients who had a fatal postoperative embolus experienced a previous non-fatal embolism. If the second embolus occurs following an initial nonfatal embolus, it is most apt to occur within a period of ten days. At the Mayo Clinic it has been the practice to allow the patient up out of bed about a week

* Read before the Milwaukee Society of Clinical Surgery Jan. 27, 1942.

after the embolus has appeared, providing the general condition warrants this, but to continue the intravenous administration of Heparin while the patient is up and about. This is done by suspending the flask from an upright rod fixed to the patient's back and by fixing the arm in a splint. Clotting of blood in the needle does not occur because of the use of the anticoagulant. In the series of patients reported by Priestley and Essex, only two patients who had Heparin subsequently died of embolism, and in one of these cases Heparin was discontinued for reasons which are now known to be insufficient. In the other case, the administration of Heparin was not started soon enough, nor was it continued for an adequate length of time. Regarding the use of Heparin in thrombophlebitis, it is felt that the course of the disease is greatly abbreviated when the substance is started promptly following the onset of the disease.

DICOUMARIN

It seems ironical that just when the use of Heparin had been firmly established, a new substance should have been discovered which bids fair to replace it. I refer to a preparation from spoiled sweet clover, which is chemically identified as 3,3′-Methylenebis (-4-Hydroxycoumarin). In 1921 Schofield,[6] in Canada, discovered that a hemorrhagic disease of cattle was due to the ingestion of improperly cured hay or silage made from common sweet clover. Roderick,[7] in 1929, discovered that the delayed coagulability of the blood was coincident with the reduction in the prothrombin content of the blood. About a year ago, Professor Karl Paul Link[8, 9] and his associates at the Wisconsin Agricultural Experiment Station were able to isolate and synthesize the hemorrhagic agent found in spoiled sweet clover. The synthetic hemorrhagic agent is quite crystalline and only slightly soluble in water, but more soluble in alkaline solutions.

Butt, Allen, and Bollman,[10] at the Mayo Clinic, have studied the effect of the administration of this compound in dogs and human beings. Dogs which received 10 milligrams by mouth did not show any effect until 48 hours later, when the prothrombin time was increased to 15 seconds and the coagulation time was delayed 5 or 6 minutes beyond normal. These animals did not show any ill effects and the prothrombin and coagulation times returned to normal within three or four days after the drug had been discontinued. Dogs which received 25 milligrams daily by mouth showed a delayed prothrombin time within 24 hours and a delayed coagulation time in 48 hours. The prothrombin time was elevated to several minutes, and the coagulation time was about 30 minutes within the next two or three days. When the drug was continued for several weeks there was an occasional tendency for the dogs to bleed from the venipuncture wound, but spontaneous recovery occurred. Apparently the intravenous administration of 4 milligrams daily did not have any effect on the prothrombin content of the blood of these animals.

Some of the animals were given a hundred milligrams of the substance daily by mouth. In these animals the coagulation time and the prothrombin time were slightly more prolonged. In addition, there was a greater tendency toward bleeding, from which they showed little tendency to recover. A few minutes after a transfusion of 150 cc. of fresh citrated whole blood, the bleeding from the venipuncture wounds ceased. Very soon the coagulation time of the blood returned to normal and the prothrombin time approached normal. It is evident that there is a continued action of the drug, because when the adminis-

tration of the drug was discontinued at the time of the transfusions there was an increase in the coagulation and prothrombin times after the initial decrease due to the transfusion.

The 3,3′-Methylenebis (-4-Hydroxycoumarin) was given to six patients. In none of these cases was any untoward effect noticed. These patients were given various doses ranging from 100 mg. a day to 400 mg. a day. One patient received 1,000 mg. of the compound orally in a single dose.

Generally speaking, there is a lag of about 48 hours before the drug takes effect. When adequate doses had been given for four or five days, the prothrombin and clotting time of the blood remained abnormally prolonged for a period of about 14 days after the drug had been discontinued. It is an interesting fact that the transfusion of whole fresh blood decreases temporarily the elevated prothrombin and coagulation times.

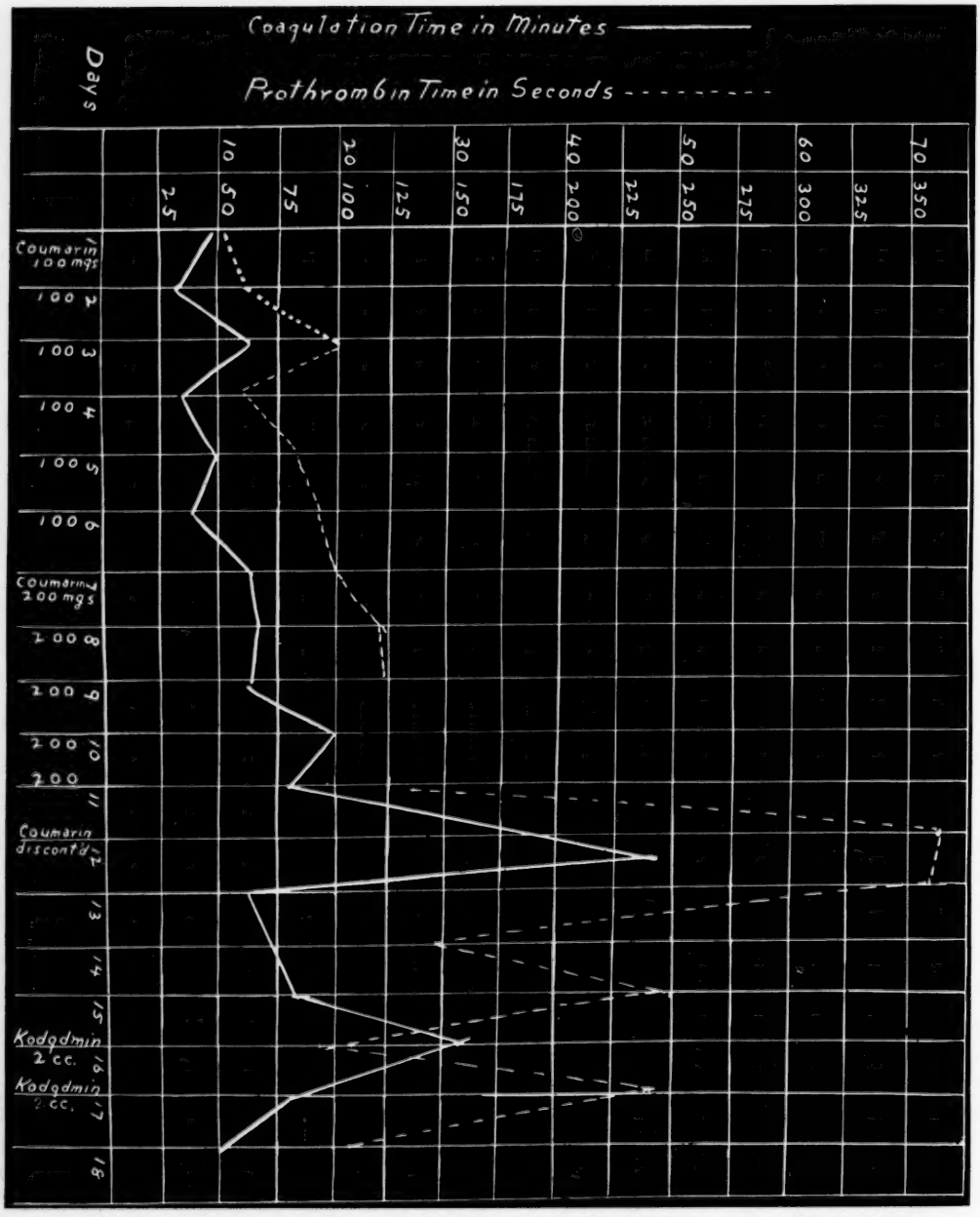
It appears, therefore, that Dicoumarin compound is as valuable as Heparin, and it has several qualities that would suggest it may take the place of Heparin. These qualities are: the effectiveness of oral administration, the cheapness with which it may be administered, and its prolonged action.

The latest published work on the Dicoumarin compound is that of Bingham, Meyer, and Pohle,[11] of the University of Wisconsin. In the first series of dogs that were given large and repeated doses of Dicoumarin, postmortem examinations revealed the following findings: all the dogs showed hemorrhage at some site. In all of the dogs there was subcutaneous and intramuscular hemorrhage. A common finding was gross hemorrhage in the gastrointestinal tract, in the pleural spaces, or hemorrhages in the lung. It is very significant to note that in no case was there demonstrated, grossly or microscopically, significant parenchymatous disease of the liver, kidney, or other organs. A common finding was marked dilatation of capillaries, veins and small arteries, and particularly in those animals that died acutely from massive doses. The dosage of the drug, as administered, varied from 71 to 280 mg. per kilo.

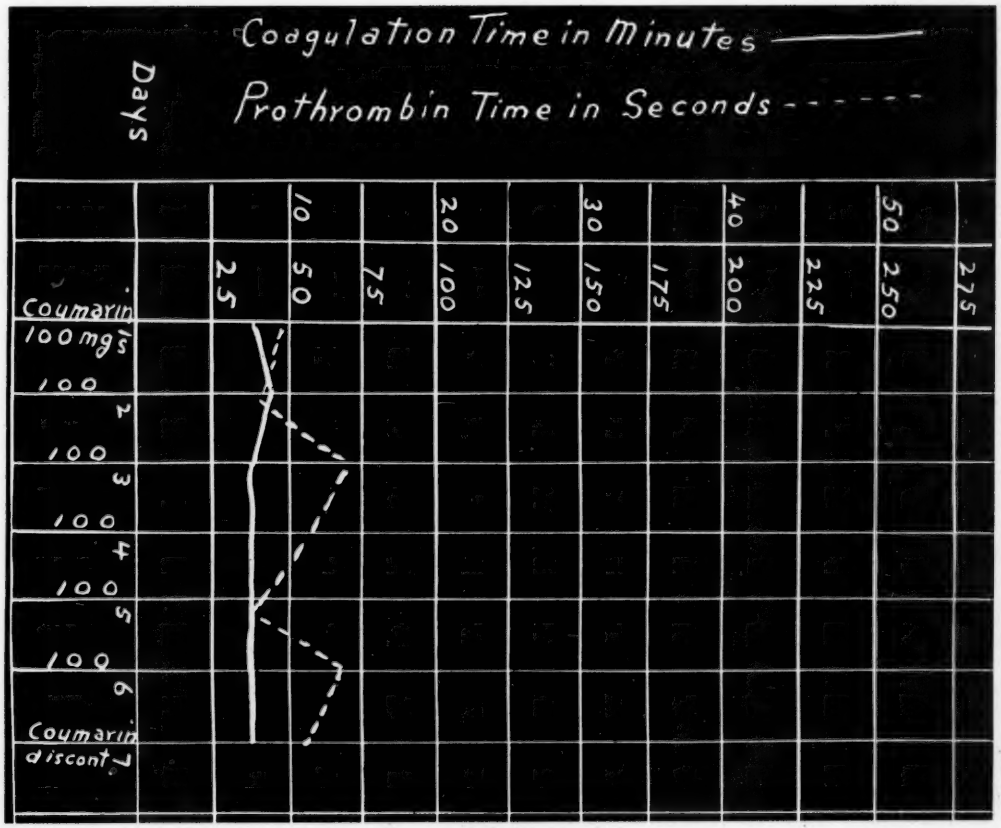
The first twelve patients treated with the Dicoumarin compound were, with one exception, patients with advanced malignancies. These patients received rather small doses, from 50 to 100 mg., and in none of the twelve patients was there any evidence to indicate any untoward results. In another series of ten patients, the disodium salt of the compound was given intravenously.

Their conclusions were as follows: after a latent period of about 24 hours or more, there was a definite prolongation of the prothrombin time and coagulation time in dogs and human beings. No harmful effects were observed following administration of the Dicoumarin to humans. The administration of Vitamin K did not affect the prothrombin time in these patients who had been given the coumarin compound, but transfusions of blood were found to be effective in shortening the prothrombin and coagulation times.

I have had an opportunity during the past month to administer the Dicoumarin preparation to five patients. The material was kindly supplied by the Abbott Laboratories. The purpose of the study was to determine the effect of measured doses of the compound on the prothrombin and coagulation times in the patient's blood. The most important part was to determine whether or not the substance prevented intravascular clotting. Another object was to establish, if possible, a standard technic for administering the drug. Finally, the patients receiving the Dicoumarin com-



Case I—Male—Thrombophlebitis—Cephalic Vein



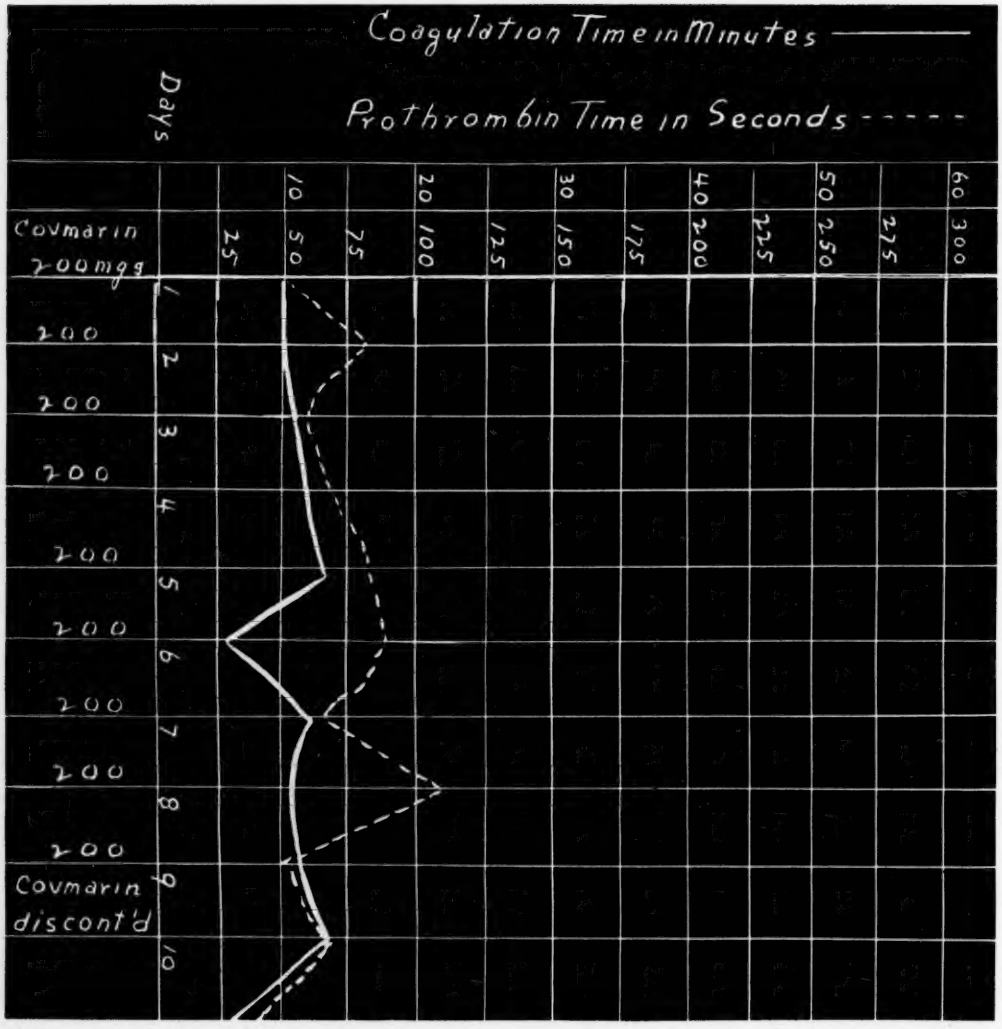
Case II—Female—Postoperative Arthrodesis-Knee

pound were watched carefully to determine if any toxic symptoms arose during the course of treatment.

The prothrombin times were determined by the method of Quick; the coagulation times were determined by the method of Lee & White. The normal values for the prothrombin time with the type of thromboplastin we used, was about 40 seconds.

Case I. The first patient was a male, 32 years of age, weighing 130 pounds. Several scratches on his left hand became infected and, subsequently, he developed a well marked thrombophlebitis of the left cephalic vein. Hot compresses were applied to the arm from the fingers to the shoulder and sulfathiazole was administered by mouth. After a week of this treatment, his temperature, which had been slightly elevated, returned to normal, and the redness along the course of the vein gradually faded. He was then allowed to sit up. He promptly developed a very severe chill, his temperature rose to a maximum of 103 degrees. At that time the Dicoumarin compound was administered by mouth, 100 milligrams being given daily for six days.

After an initial lag of 24 hours, the effect of the drug on the coagulation and prothrombin times became apparent. During the following week there was a gradual and significant rise in both the coagulation and prothrombin times. On the 7th day, the coagulation time was 13 minutes and the prothrombin time was 100 seconds. 200 mg. of Dicoumarin was given orally on 5 successive days. At the end of this time both the prothrombin and coagulation times were markedly affected. The maximum readings were 49 minutes for the coagulation time and 364 seconds for the prothrombin time. The drug was discontinued at this point. Subsequent daily observations showed a gradual reduction in the coagulation and prothrombin times. On the 16th and 17th days after beginning the treatment, 2cc. of Koagamin was given intramuscularly on successive days. No immediate de-



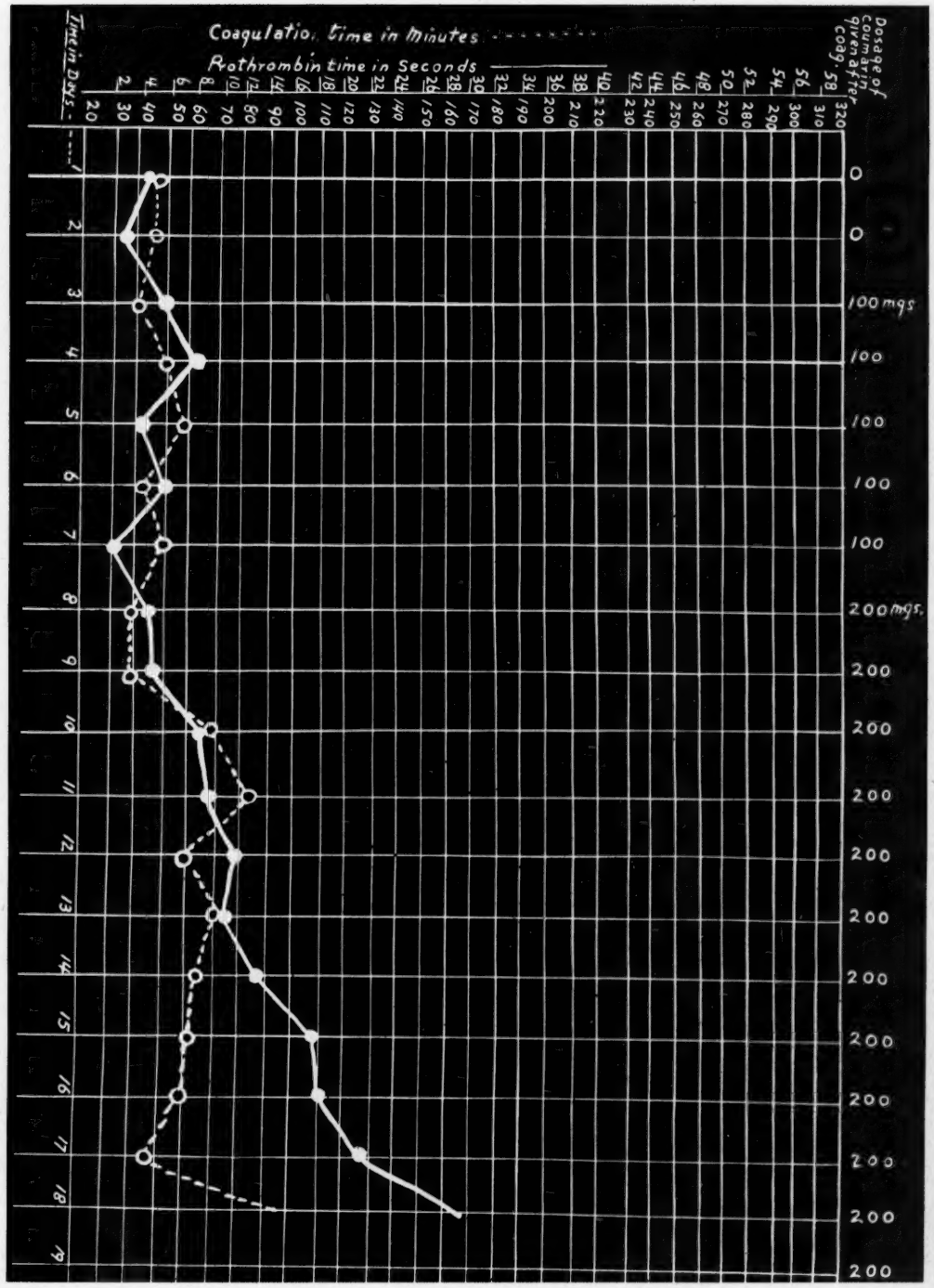
Case III—Male—Fracture Femur

termination of coagulation and prothrombin times was made, but after 24 hours, the coagulation and prothrombin times were not significantly reduced.

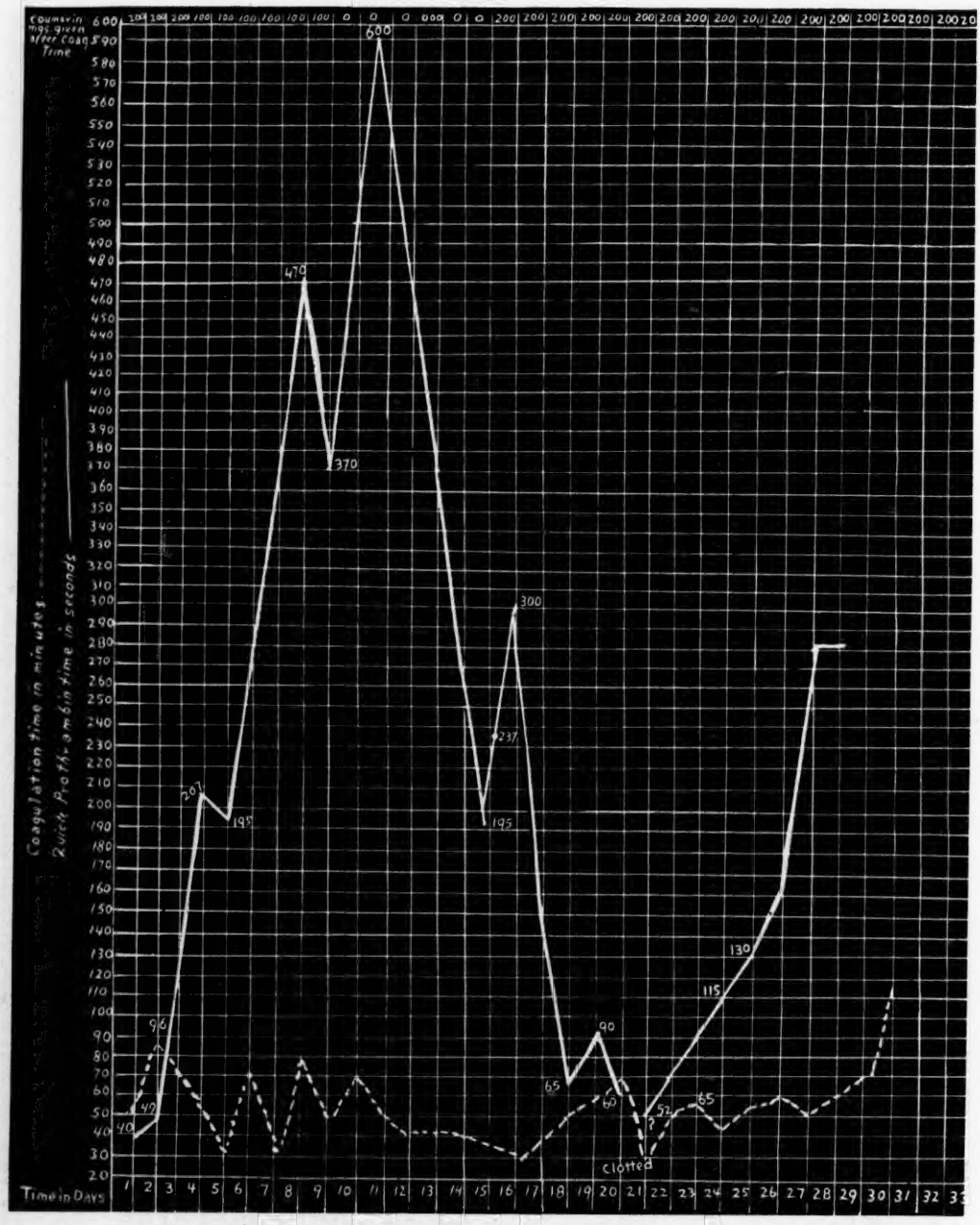
The patient made a very satisfactory recovery after beginning this treatment. Within a period of 11 days, the patient received 1600 mg. of coumarin in all. Six days after the drug had been discontinued, the prothrombin and coagulation times were approximately normal. There is no evidence of any recurrence of the thrombophlebitis in the cephalic vein, at no time were any toxic symptoms observed, nor was any bleeding tendency noticed.

Case II. The second patient was a female, aged 59, weight 160 lbs., who was convalescing from an arthrodesis of the left knee. 100 mg. of the Dicoumarin compound were given by mouth on six successive days. No effect was observed on the coagulation time. There was a small but significant rise in the prothrombin time to a maximum of 70 seconds. In all, this patient received 600 mg. of Dicoumarin Compound. No toxic symptoms were observed during the course of this treatment.

Case III. The third patient was a male, 24 years of age, weighing 180 lbs., who had sustained a concussion of the brain, and a fracture of his left femur as a result of an automobile accident. On the 12th



Case IV—Male—Thrombophlebitis-Legs—Infaret Lung



Case V—Female—Thrombophlebitis-Leg—Infarct Lung

day of his admission, 200 mg. of Dicoumarin were given by mouth and this dose was repeated every day for 9 successive days. Daily determinations of the coagulation time did not reveal any significant changes. The prothrombin time was increased from 60 seconds before the drug was administered to 80 seconds 24 hours later. After a week, the prothrombin time reached its highest level of 110 seconds. This patient received 1800 mg. of Dicoumarin in a period of nine days. There were no clinical signs to indicate that the drug was not well tolerated. No bleeding tendency appeared. Twenty-four hours after the drug had been discontinued, the prothrombin and coagulation times were normal.

Case IV. The fourth patient was a male, 33 years of age, weight 198 lbs. He was admitted to the hospital on August 13, 1941. His complaint at that time was a deep substernal pain, which was aggravated by deep breathing or exertion. Shortly before admission he had a coughing attack in which he brought up a small amount of bloody sputum. On admission he had a temperature of 100 degrees F. and he continued to run this elevated temperature for several weeks. The physical signs and the electrocardiogram suggested that he was suffering from a gross myocardial infarction. Subsequently he developed fluid in the right chest which was aspirated on two occasions. He was allowed to sit up in a chair on October 13 because his condition was greatly improved. Two days later he developed a thrombophlebitis in the right thigh. The usual treatment was given for the thrombophlebitis and his condition had so improved that his attending physician allowed him to sit up in a chair on November 23. On December 9, he developed a thrombophlebitis in the left thigh.

I saw him first on December 16. On this day, the coagulation time was 4 minutes and the prothrombin time was 35 seconds. These procedures were repeated on the two following days and the results were quite similar to those obtained on the first day. He was then given 100 mg. of the Dicoumarin compound for five successive days without any apparent effect upon the coagulation or prothrombin times. For the following twelve successive days, he was given 200 mg. of Discoumarin compound. Two days after this increased dosage of Dicoumarin had begun, the coagulation time was slightly over 8 minutes, and the prothrombin time was 66 seconds. On the last day on which the tests were performed, the prothrombin time was 165 seconds and the coagulation time was 15 minutes.

This patient received 2700 mg. of Dicoumarin compound within a period of 16 days. It was not possible to continue these blood determinations as the patient was discharged to his home in another town.

The most significant thing in the treatment of this case was that a week after taking the coumarin compound, his clinical symptoms had largely subsided and he was allowed to sit up in a wheel chair. From then on he continued to convalesce quite rapidly and at the time of his dismissal from the hospital, he was able to walk without assistance. He had been a patient in the hospital for a period of four months before beginning the Dicoumarin treatment, and he was discharged two weeks after beginning the treatment. I have been informed by the attending physician that the patient passed blood in his urine for three days a week after his discharge from the hospital. No other bleeding tendency has been observed since.

Case V. The fifth patient was a female, 60 years of age, weight 175 lbs. About ten days before admission to the hospital, she developed a severe pain in the left groin. The doctor who examined her at that time found no swelling or fever present. A week later she developed a slight swelling in the groin and the region of the fossa ovalis was very tender to palpation. Two days later she had a sudden stabbing pain in the right chest which was followed in a few days by the expectoration of bloody sputum.

Before beginning treatment, it was determined that her coagulation time was 8 minutes and her prothrombin time was 40 seconds. She was given 200 mg. of Dicoumarin for three successive days. At the end of this time there was a remarkable rise in the prothrombin time to 470 seconds, while the coagulation time was 5 minutes. The amount of coumarin given was reduced to 100 mg. a day for six successive days. During this period the prothrombin time remained at a very high level, reaching a maximum of 600 seconds on one occasion. The coagulation time, on the other hand, ranged through a narrow level between 14 and 6 minutes.

After the Dicoumarin compound had been discontinued for 3 days, the prothrombin level returned to approximately normal values. Then she was given 400 mg. of Dicoumarin at a single dose without any immediate effect on the coagulation or prothrombin times. She was then given 200 mg. of Dicoumarin for 9 successive days. From then on, both the prothrombin and coagulation times were markedly altered. Two days after this last series of Dicoumarin had been administered, the prothrombin reading was 660 seconds and the coagulation time was 18 minutes. Five days after the discontinuance of the drug, the prothrombin time was 150 seconds and the coagulation time was 13 minutes. About a week after the drug had been used, the clinical symptoms subsided to a marked degree in that expectoration of bloody sputum became less frequent and finally disappeared. Coincident with this, the pain in the groin disappeared.

Five days after the drug had been discontinued, and while the prothrombin and coagulation times were still elevated, she developed a pain in her left knee and a pain in her right chest and again expectorated a small amount of bloody sputum. These symptoms lasted only a day and a half and then subsided. She has been free from them for over two months.

In all, this patient received 5200 mg. of the drug within a period of 33 days. The daily determinations of prothrombin and coagulation times were continued after the discontinuance of the drug, which required a period of seven days before the prothrombin and coagulation times returned to normal. About two weeks after the drug had been discontinued, the patient was able to be discharged to her home. She was able to walk with assistance and there was no evidence of thrombophlebitis in the left leg nor had she coughed up any blood.*

* Since this paper has been submitted the author has used the Dicoumarin preparation on six additional cases. Two patients with pulmonary embolism promptly recovered without any untoward symptoms. In four other cases suffering from thrombophlebitis, the condition rapidly subsided with the use of the preparation.

DISCUSSION

It is certainly too early to evaluate the value of the Dicoumarin compound. There is no question that it has a decided effect upon the coagulation and prothrombin times. It would be fair to assert, I think, that it had a beneficial effect on Cases I and IV, namely, the patient who had the thrombophlebitis of the cephalic vein and the patient who had pulmonary infarcts and thrombophlebitis of the veins of both legs.

In the fifth case, it is strange that the patient should develop clinical evidence of an infarct in the right lung while the prothrombin time and coagulation time were still markedly elevated. However, this was a case that on admission presented a very unfavorable outlook and the attending physicians gave her a very poor prognosis. It is possible that the drug may have averted a fatal termination.

It is, perhaps, unnecessary to note that patients have recovered from serious attacks of thrombophlebitis and pulmonary embolism without the benefit of this treatment. Until the time comes when we can compare a large series of cases which had not been treated against a similar series which had received this treatment, we will not know the real value of Dicoumarin. However, I feel that it has a definite place in the treatment of these conditions and should be continued.

Apparently the drug was not toxic in the dosage which has been administered in these cases. The fourth patient passed blood in his urine for three days a week after he had left the hospital. There has been no further recurrence of the hematuria to date. You will note that when he left the hospital, the prothrombin time and coagulation time were still moderately elevated. It may well be that the Dicoumarin was responsible for this sequel. On the other hand, it might be suggested that the hematuria was due to an infarct in the kidney. As I have said before, this was the only untoward complication in any of these patients.

One obvious defect of the drug is that it does not take effect for 24 to 48 hours. This suggests that the proper treatment in such an emergency as a pulmonary embolism would be to administer Heparin and Dicoumarin together and at once. The Heparin could be discontinued when the coagulation time of the blood was about 15 to 20 minutes.

SUMMARY

A preparation from spoiled sweet clover, identified as 3,3′-Methylenebis (-4-Hydroxycoumarin), has been found to increase the coagulation time and prothrombin time in animals and man.

This substance has been used on three patients suffering from such conditions as pulmonary embolism and thrombophlebitis. In all these cases it proved effective in combating the tendency of the blood to clot, and the patients made satisfactory recoveries.

It was used also in two cases following major surgical procedures, and the effect on the coagulation time and prothrombin time of these patients has been recorded.

The drug, apparently, is not toxic in the doses used, although one patient developed a hematuria, which rapidly subsided after the drug had been withdrawn.

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SUMARIO

Una preparación de trebol dulce echado a perder, identificado con 3,3'-Metilenebes (-4-Anhidridocoumarin), ha sido encontrado que aumenta del tiempo de coagulación y el tiempo de formación de la protrombina en los animales y hombre.

Esta substancia ha sido usada en tres enfermos, sufriendo por tal condición como embolismos pulmonares y tromboflevitis. En todos estos casos resulto efectivo en combatir la tendencia de la sangre a coagularse, y los enfermos hicieron una cura satisfactoria.

Este fué usado tambien en dos casos siguiendo cirugía mayor, y los efectos en la coagulación y el tiempo de la formación de la protrombina de estos enfermos fue registrado.

La droga, aparentemente, no es tóxica en las dosis usadas, aunque un enfermo desarrollo una hematuria que desparecio rapidamente despues que la droga fue suspendida.

RÉSUMÉ

On a trouvé qu'une préparation de trèflex doux avariés, identifiée: 3,3'-methylenebis (-4-Hydroxyl-Coumarin) prolongeait le temps de coagulation et de prothrombine.

On a employé cette substance sur trois malades. Ces malades souffraient d'embolisme pulmonaire et de thrombophlébite. Dans tous ces cas, on a réussit à combattre la tendance du sang de se coaguler. Les malades se rétablirent.

On a aussi employé cet agent en deux cas de chirurgie majeure. On nota les résultats sur le temps de coagulation et de production de prothrombine.

La drogue, apparemment, n'est pas toxique dans les doses auxquelles nous eûmes recours quoique qu'un des malades aît eu une hématurie qui cessa aussitôt que la drogue fut supprimée.

INTER-AMERICAN EXCHANGE TRAINING

Professor Herman de las Casas, Dean of the Faculty of Medicine, University of Caracas, Venezuela, has been appointed Chairman of the Inter-American Exchange training activities. Those desiring further information please communicate with Professor Herman de Las Casas, Sarria, Caracas, Venezuela.

El Sistema del Hepatico*
Su fisiopatología
(The Muscular System of the Hepatic Duct)

P. L. MIRIZZI, F.I.C.S. (Hon.), F.A.C.S. (Hon.)
CORDOBA, ARGENTINA

SUMMARY

In the opinion of the author, the hepatic duct has a muscular system which prevents the backward flow of the bile during the contraction of the gall bladder and forces the bile into the main excretory duct. This factor is of prime importance in cholecystoduodenostomy, for if the hepatic muscular system were destroyed the bile might possibly flow back toward the liver. Results of operation and clinical observation (with cholangiography) are presented in support of the author's theory.

En la sesión de la H. Academia de Medicina, Buenos Aires, del 22 de Octubre de 1937, bajo la Presidencia del Prof. B. Houssay, me referí a "Observaciones sobre fisiopatología de la vía extrahepática, mediante la colangiografía operatoria." En dicha ponencia llamé la atención sobre algunos fenómenos que inducían a creer en la existencia de un mecanismo contráctil a nivel del conducto hepático, que en ciertos momentos independiza las ramas intraglandulares de la vía excretoria extrahepática. Dicha misión, ligada a la función excretoria biliar normal, en el curso de afecciones biliares o extrabiliares, a la luz de los documentos radiológicos, se afecta en tal forma que da bases para fundamentar una patología anátomo-functional en los dominios del hepático.

* Presented at the International Assembly of the International College of Surgeons, Mexico, D. F., August, 1941.

I. FISIOLOGÍA DEL HEPÁTICO

En los casos normales, desde el punto de vista funcional, en el vaciamiento o repleción de la vesícula, se destacan dos sistemas excretorios coordinados: el vesículo-coledociano y el del hepático. El mecanismo contráctil del hepático, a manera de un esfínter fisiológico, entra en juego, oponiéndose al reflujo hacia el árbol biliar superior, cuando la vesícula vacía su contenido durante la digestión. La contracción del hepático, en los intervalos de la digestión, asociada a la mayor tonicidad del esfínter de Oddi, obliga a la bilis, almacenada temporariamente en el colédoco, que penetre en la vesícula.

Ahora bien; en el sistema del hepático se destacan, mientras la función se cumple dentro de un marco normal, dos hechos sobresalientes: la acción propulsora de todo el sistema y papel protector del esfínter fisiológico del hepático.

El sistema del hepático es un propulsor de la vía excretoria principal. La observación diaria demuestra, en la estasis biliar, sea cual fuese la naturaleza del obstáculo a lo largo del conducto colédoco, un aumento del diámetro de las ramas intrahepáticas, cuyo máximo de dilatación se ve en las observaciones permanentes de la parte distal.

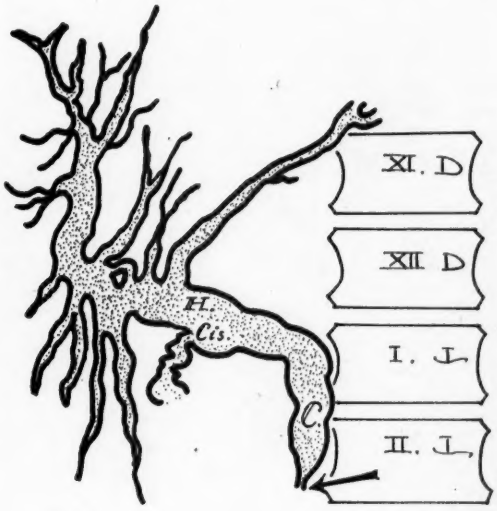
De esta categoría de pacientes se separan dos grupos principales: el primero, caracterizado por la subsistencia

de una gran dilatación intrahepática, después de eliminar el obstáculo; es razonable denominarlo descompensado. El segundo, está constituído por aquellos ejemplos, en que se observa de inmediato una franca reacción de todo el árbol biliar intrahepático, traducido en la imagen objetiva, por una reducción notable del diámetro de todas las ramas; está justificado asignarle el nombre de compensado.

Pues bien; este grupo de portadores de un sistema del hepático compensado corresponde a los obstáculos sine concremento, incompletos, del tercio distal del colédoco (odditis, pancreatitis estenosante) y a ciertos y determinados casos de litiasis del colédoco. Son precisamente enfermos que, a lo sumo, registran un tinte subictérico; la función hepática se mantiene dentro de un marco normal; el sondeo duodenal es positivo y los alivia singularmente.

La colangiografía operatoria, en el grupo compensado, demuestra en forma evidente, la fase de dilatación máxima de todo el sistema del hepático, inclusive, ocasionalmente, la del conducto hepático mismo, verdadera diástole, si lo asimilamos al corazón (véase fig. 1). A ella le continúa la fase de contracción total del árbol intrahepático, equiparable al sístole cardíaco, seguido del desalojo, casi total, de la substancia de contraste hacia el colédoco, cuyo diámetro se conserva sensiblemente igual en los dos tiempos. El sistema del hepático obra, a guisa de pera de goma, como un propul-

Figura N° 1.



Esquema N° 1.

Colangiografía operatoria. Pancreatitis estenosante "Infundibuliforme"
La inyección fué practicada por el cístico (Cis). El árbol biliar está dilatado; el sistema hepático (H) está fuertemente inyectado y se ven hasta las ramas más finas; el colédoco (C) desplazado hacia la línea media en punta roma, formando un infundíbulo.
Historia clínica: III Serie, N° 61, V. A. de G., mujer de 41 años. El primer cólico hepático data de siete años; los ataques se han repetido con cierta frecuencia. En los últimos tiempos recrudecieron los vómitos y apareció fiebre.
Operación: Colecistitis calculosa. Colecistectomía. Pequeño absceso yuxtavesicular.

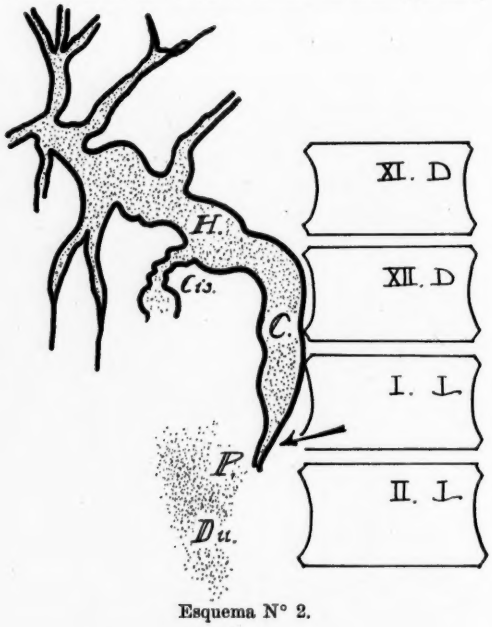
sor activísimo de su contenido (véase fig. 2).

Establecer una diferencia entre árbol biliar dilatado que vence el obstáculo y sistema del hepático dilatado, atónico, que ha perdido momentáneamente su poder reaccional, tiene gran significado, no sólo para explicarnos ciertos trastornos ligados a la descomposición brusca de la vía biliar principal, cuyo punto no me incumbe tratar en este momento, sino para autorizar al cirujano la ejecución de anastomosis bilio-intestinales, que requieren, como condición indispensable, la integridad funcional del sistema del hepático. Me refiero a la cístico-duodenostomía.

El esfinter fisiológico del hepático juega un papel protector. Dejaré de lado toda disquisición de orden teórico, para concretarme a los hechos objetivos, experimentales y los ofrecidos por la patología biliar, registrados mediante la C. O. que afirman, cada vez más, la posición defensiva del conducto hepático. No sería exagerado decir que es uno de los centinelas más avanzados del sistema y protector de la célula hepática.

1° La experimentación: La vivisección a cargo de mi discípulo Aguirre, ha confirmado una vez más las experiencias practicadas desde muchos años atrás. La extirpación de la vesícula acarrea la dilatación del árbol biliar intrahepático, con la formación frecuente de una suedovesícula, a expensas del muñón del cístico remanente. El hecho no tiene nada de extraordinario, pero comprueba que la exéresis del órgano modifica el sistema excretorio biliar, con la consiguiente repercusión sobre la morfología de las ramas intrahepáticas.

Figura N° 2.



Esquema N° 2.

Colangiografía operatoria. Pancreatitis estenosante "Infundibuliforme"
Pertenece a V. A. de G. Diez minutos más tarde se aprecia que el sistema del hepático (H) se ha contraído; el colédoco (C), sin modificar su diámetro, dotado de activa peristalsis, ha hecho progresar el lipiodol por un trayecto irregular "infundibuliforme," situado en su tercio terminal; por la papila de Vater (P) ha pasado un poco de substancia de contraste hacia el duodeno (Du).

Una segunda serie de experiencias (Aguirre), lleva al convencimiento que una derivación adecuada, de carácter permeable, no obstante la permeabilidad del colédoco, como la ofrecida por la cístico-duodenostomía, contrarresta los efectos de la colecistectomía, preservando el árbol biliar intrahepático de la dilatación. Este hecho permite suponer la integridad del mecanismo de control, en la parte terminal de cada uno de los hepáticos, preservada gracias a la acción suplementaria de la cístico-duodenostomía. En estas condiciones experimentales, con animales operados meses antes, se ve en el curso del estudio radioscópico, mediante la inyección de lipiodol en el colédoco, bajo débil presión, que la substancia de contraste se elimina tanto por la anastomosis, como por la papila de Vater; el lipiodol no penetra en las ramas intrahepáticas, cuando más, se le ve en el comienzo de los hepáticos. La inyección bajo fuerte presión, demuestra que las pocas ramas intrahepáticas inyectadas presentan una discreta dilatación; ésta debe inculparse más a la violencia empleada, que a las modificaciones morfológicas preexistentes.

El comportamiento de cada uno de los hepáticos del perro, como si estuviesen dotados de un mecanismo contráctil, permitiría suponer la existencia de un dispositivo nervioso que lo regiría y tuviera bajo su dominio los distintos ramos tributarios.

2° Patología biliar: La estasis biliar, en sus distintos grados, repercute de inmediato sobre la morfología del colédoco y del sistema del hepático. El esfinter fisiológico del hepático se opone, dentro de un cierto límite, a la dilatación de las ramas intrahepáticas y su acción benéfica se hace sentir en las obstrucciones incompletas sine concremento (odditis, pancreatitis) o en la litiasis del colédoco, asociada a una fístula.

(a) Obstrucciones incompletas sine concremento: En reiteradas ocasiones he presentado la documentación radiológica, probatoria de que la contracción del hepático, ofrece obstáculo a todo el reflujo hacia el árbol biliar superior, cuando el libre paso de la substancia de contraste está más o menos obstaculizado a nivel del tercio distal del colédoco, por un defecto de canalización pancreático o vateriano. Este tipo de obstrucción se encuentra, aproximadamente, en un 10% de los casos de colangiopatías litiásicas o sine concremento, porcentaje elevado, desde luego, que induce, con justa razón, a prestar atención al hecho consignado.

Son casualmente ejemplos en los cuales se debe preservar la vía excretoria principal, máxime si la vesícula no está excluída de distensiones futuras, verdaderas causas eficientes de secuelas dolorosas, después de la colecistectomía. Se impone, en este género de casos, la cístico-duodenostomía, como operación complementaria, cuya acción benéfica sobre la estasis se hace sentir de inmediato.

En este tipo de obstáculo, prima, con frecuencia, el factor funcional o anatómico, de carácter pasajero (congestión, edema), circunstancias ambas que atestiguan un ritmo intermitente o por lo menos sometido a regresión, que en ciertos momentos se aproxima a la normal. Precisamente, por estas remisiones frecuentes, es dable observar la subsistencia del papel protector del esfinter del hepático, cuyo poder contráctil se vence de inmediato, cuando el obstáculo es cerrado y permanente.

(b) Litiasis del colédoco, asociada a una fístula: Habitualmente, en la litiasis del colédoco, el esfínter fisiológico del hepático está vencido y su sistema se presenta francamente dilatado; empero, la coexistencia de una fístula colecisto-duodenal, que desempeñe un papel vicario, contrarresta los excesos de presión y se acompaña de un sistema del hepático

indemne, probatorio, desde luego, que la contractibildad del conducto no fué afectada y que desempeña su función habitual.

Es llamativo observar, en los casos de sistema del hepático compensado, la benignidad del cuadro clínico, la excelente función hepática, lo cual contrasta con los fenómenos generales más marcados y signos francos de insuficiencia hepatorrenal, en la litiasis del colédoco, acompañada de un árbol biliar totalmente dilatado y atónico.

II. PATOLOGÍA DEL HEPÁTICO

En el curso de un número aproximado de 700 pacientes de las vías biliares, en su inmensa mayoría de litiasis, intervenidos bajo el control de la colangiografía operatoria, existen documentos radiográficos que prueban la participación del sistema del hepático en el cuadro clínico.

Se han observado manifestaciones funcionales, anátomo-funcionales y anatómicas.

A. Sindrome funcional. El hepático, perturbado en su función contráctil, deja de actuar en acción sinérgica con el resto de la vía excretoria y se presenta, a la luz de la colangiografía operatoria, como un factor eficiente, tanto en el cuadro doloroso como en la estasis biliar.

1° Observación: V Serie, N° 16, L. F., 32 años, ingresó en Octubre de 1937. En los últimos tiempos tuvo varias crisis de cólico hepático. Fué tratada como cardiópata, en vista de signos evidentes de miocarditis.

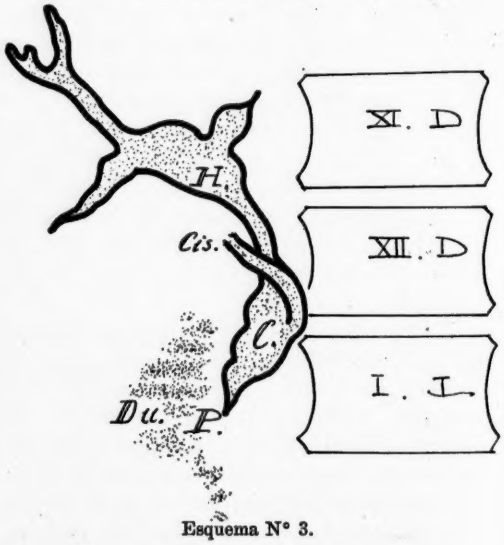
Operación: Colecistitis crónica calculosa. Conducto cístico permeable, que cruza por delante "a manera de banda," la vía biliar principal, y desemboca en el borde interno del segmento retroduodenal.

Colangiografía operatoria: 1° clisé (fig. 3). La inyección fué practicada a través del cístico. El sistema del hepático, algo dilatado, se presenta inyectado. Se corrobora la disposición anormal del conducto cístico y su desembocadura a un nivel inferior. El conducto colédoco, aumentado de diámetro, es visible. Al duodeno ha pasado un poco de lipiodol.

2° Clisé (fig. 4): Se observa que el sistema del hepático permanece inyectado y se ve un conducto hepático accesorio. El conducto colédoco reducido de diámetro, ha expulsado casi todo su contenido hacia el duodeno.

La primera observación demuestra que la retención de la substancia opaca, en las ramas intraglandulares, depende de un factor activo, obstructivo, pasajero, a

Figura N° 3.



Esquema N° 3.

Colangiografía operatoria. Implantación anormal del cístico. Sindrome funcional del hepático. Pertenece a la primera observación. La inyección fué practicada a través del cístico. El sistema del hepático (H) está inyectado; el conducto cístico (cis) atraviesa la vía biliar principal "a manera de banda" y desemboca en su borde interno, a nivel inferior; el colédoco (C) está aumentado de diámetro; al duodeno (D) ha pasado lipiodol por la papila (P). En esta radiografía no se ve el hepático accesorio.

nivel del canal hepático, de lo contrario no se explicaría la inyección del conducto supernumerario. La contracción del árbol biliar superior no ha sido suficiente, momentáneamente, para vencer la resistencia del hepático contraído, empero, originó el reflujo de la substancia opaca en los dominios del conducto accesorio, cuya confluencia está situada por encima del segmento contraído. Se produce un fenómeno similar a la distonía del esfínter de Oddi, a expensas de la contracción de la parte inferior simpaticotropa, que origins el reflujo hacia el conducto de Wirsung.

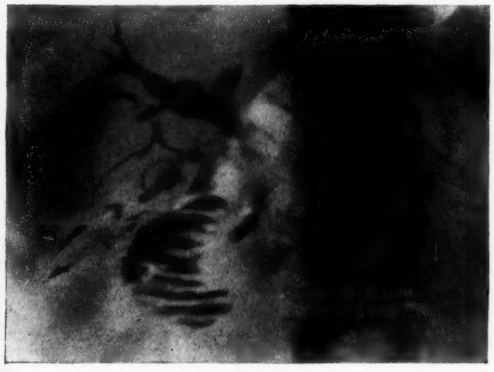
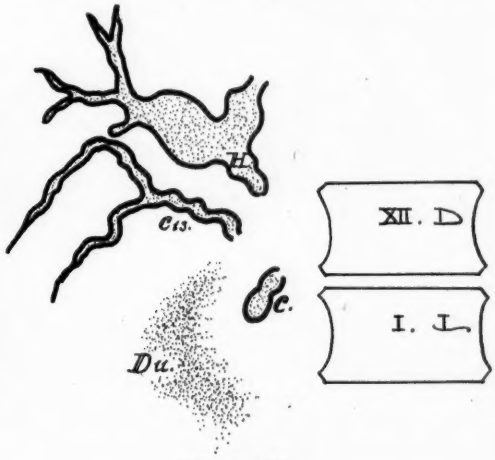


Figura N° 4.



Esquema N° 4.

Colangiografía operatoria. Conducto hepático accesorio. Sindrome funcional del hepático. Pertenece a la primera observación. Pocos minutos más tarde se observa que el sistema del hepático (H) permanece inyectado; el conducto accesorio es visible (CS); el colédoco (C) ha evacuado casi todo su contenido el duodeno (D).

2° Observación: VII Serie, N° 43, C. M. de P., 55 años, obesa, multípara. Hace tres años tuvo un dolor intensísimo en la región epigástrica, náuseas y vómitos. El ataque fué seguido de ictericia y decoloración de materias, durante dos meses aproximadamente. Después ha tenido crisis dolorosas con intervalos. Ha disminuido 21 kgs. de peso. Puntos vesiculares positivos.

Operación: 30.V.40. El espacio subhepático estaba bloqueado; las adherencias eran robustas con el colon y el duodeno. La vesícula ha quedado reducida a un núcleo fibroso, hecho que hizo presumir que hubiera estado comuicada con el intestino y cuya fístula cerró. Durante la disección se cortó el cístico a ras del colédoco.

Colangiografía operatoria: La ausencia del conducto cistico exigió la inyección directa en el colédoco, con más rapidez que de costumbre, debido al reflujo del lipiodol por los lados de la cánula.

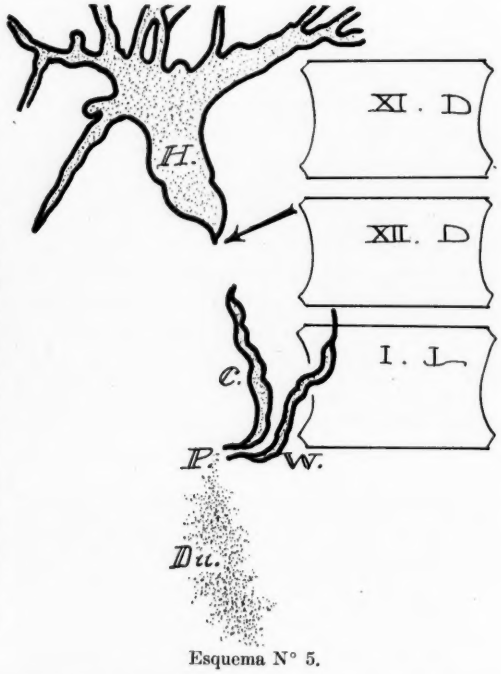
Se optó por inyectar 8 c. c. de lipiodol (casi el triple de la dosis inyectada, cuando el colédoco es normal) en vista de la falta de reseña, por el proceso adhesive adyacente al hilio hepático, del diámetro y estado anatómico del colédoco; se tuvo presente la ictericia prolongada, lo que no descartaba la posibilidad de un obstáculo calculoso o sine concremento.

La inyección rápida y excesiva distendió el árbol biliar y provocó espasmos. Así vimos que el sistema del hepático estaba ingurgitado y el conducto fuertemente contraído. El colédoco se presentó apenas aumentado de diámetro, dotado de peristalsis, y el conducto de Wirsung estaba inyectado. La papila había dejado pasar lipiodol (fig. 5).

En el segundo clisé, obtenido diez minutos más tarde, la situación no cambió, excepto el diámetro del colédoco, reducido a las dimensiones normales, contrastando con el conducto hepático distendido por encima del espasmo de su segmento distal (fig. 6).

En esta observación se aprecia claramente, las consecuencias de la distensión brusca de un árbol de paredes elásticas e irritables y demuestra que el espasmo puede circunscribirse al conducto hepático y acarrear una estasis más o menos prolongada en sus dominios. Son, en realidad, los primeros pasos que conducen a la dilatación paulatina de las ramas intrahepáticas; sería lógico pensar tambbíen, que dicha estasis domine la patogenia de las ictericias pasajeras, en el curso del cólico hepático.

Figura N° 5.



Esquema N° 5.

Sindrome funcional del hepático. Colangiografía operatoria.
La inyección de lipiodol de 8 c.c. directa en el colédoco fué practicada en ½ minuto. El sistema del hepático (H) se presenta distendido por la contracción del conducto (⟶). El conducto colédoco (C) ligeramente dilatado, dotado de activa peristalsis, vacía su contenido en el duodeno (D) a través de la papila (P); la substancia opaca ha refluido hacia el conducto de Wirsung (W).

B. Sindrome anátomo-funcional. El sindrome anátomo-funcional lo he observado cuando la concreción se encastilla en el vestíbulo o en el trayecto del cístico, particularmente cuando adherencias robustas mantienen unidos estos dos segmentos vesiculares al conducto hepático, como "caños de escopeta" (fig. 7). La subintración de los ataques, la ictericia, suelen ser las manifestaciones clínicas sobresalientes en estos casos.

Observación: IV Serie, N° 67. La paciente, a raíz de cólicos hepáticos, presentaba una ictericia marcada. En el Servicio mejoró con sondeos duodenales, pero no se consiguió que bajase la bilirrubinemia a la tasa normal; se operó la enferma francamente ictérica con el diagnóstico de litiasis del colédoco.

La operación demostró una vesícula retraida con cálculos; el vestíbulo estaba sepultado en el ligamento hépato-duodenal. La palpación localizó un cálculo en el hilio del hígado; pensé en un cálculo del hepático. Deliberadamente practiqué la coledocotomía, con resultado negativo.

La colangiografía operatoria demostró un árbol biliar exento de cálculos; el sistema del hepático distendido; el colédoco de diámetro normal y papila de Vater permeable.

La investigación ulterior mostró que el calculo estaba encastillado en el vestíbulo de la vesícula, adosado al conducto hepático por fuertes adherencias.

Observación: VII. S. No. 17. A. P. 24 años; ingresó al comienzo de 1941.

Se le extirpó el apéndice 6 años atrás. Hace un año se la operó de ginecomastia. El primer cólico hepático, sin irradiación, lo tuvo hace cinco años. Ciertos alimentos le provocaban la epigastraglia.

En los últimos tiempos aparecieron las irradiaciones comunes del cólico hepático. Dice haber notado, en ocasiones, un tinte subictérico. Fué tratado por ulceroso. En las semanas que precidieron a su ingreso y durante la permanencia en el servicio hasta la víspera de intervenirse, hubo una *serie de ataques dolorosos*, más o menos fugaces. La colecistografía fué negativa, a repetición. El sondeo duodenal fué negativo.

En la operación se encontró la vesícula sin contenido líquido, de paredes gruesas, con una adherencia laminar, vascular, que partía de su cara inferior y se dirigía hacia el ángulo cólico derecho, mesocolon y duodeno. En el vestíbulo había un *cálculo* del tamaño de una aceituna pequeña, encastillado. Al practicar la disección del cistico, se lo notó rodeado de tejido esclerosado; se vieron además *filetes nerviosos* englobados en el tejido fibroso y, en particular, *adherencias con el canal hepático*, cuya separación fué menester

Figura N° 6.

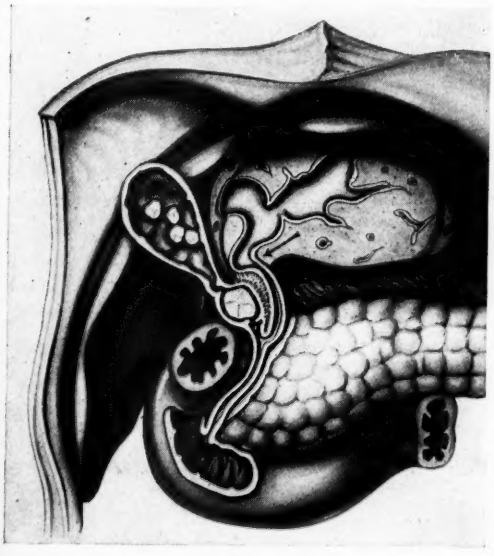
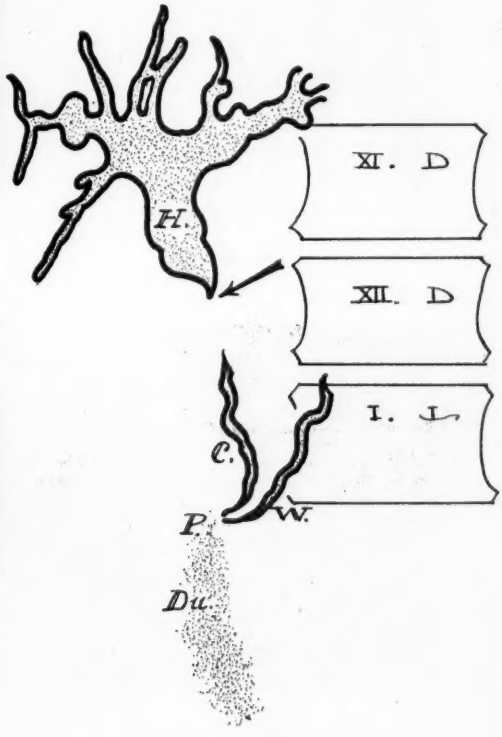


Figura N° 7

hacerla con sumo cuidado, desde luego, para evitar una solución de continuidad.

La *colangiografía operatoria* demostró un colédoco filiforme y papila de Vater libre, el sistema del hepático, algo dilatado, revelaba un cierto grado de estasis.

El Prof. Strada efectuó el examen de la visícula y del conducto cístico. Encontró, además de las lesiones comunes de colecistitis, signos evidentes de *neuritis*. El informe dice textualmente: "El fenómeno fundamental, en el vestíbulo y cístico, es el predominio de las lesiones vasculares y nerviosas. Los filetes nerviosos muy edematosos, gruesos, están afectados de *endo y perineuritis*.



Esquema N° 6.

Sindrome funcional del hepático. Colangiografía operatoria.

Diez minutos después. El sistema del hepático (H) se mantiene igualmente inyectado; la contracción distal del conducto hepático (⟶) es el obstáculo (C) de diámetro casi normal, dotado de movimiento de reptación hace progresar el lipiodol hacia el duodeno (D) a través de la papila (P); el contenido de Wirsung (W) es visible en su tercio terminal.

Figura N° 7.

Esquemática. Sindrome anátomo-functional.

El cálculo está encastillado en el vestíbulo, unido por fuertes adherencias al hepático como "caños de escopéta". La estasis en el sistema del hepático es evidente; el colédoco, de diámetro normal, comunícase libremente con el duodeno.

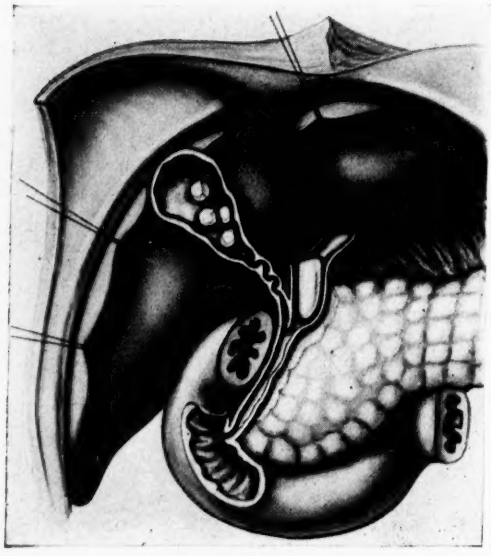


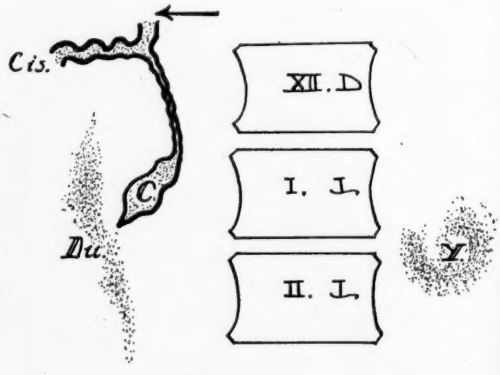
Figura N° 8

Respecto a la *neuritis de la encrucijada,* comprobada por el estudio anátomo-patológico, a mi modo de ver, constituye un hecho de gran interés. Se recordará que Aschoff llamó la atención sobre el segmento distal del cístico, desprovisto de válvulas, pobre en fibras musculares, en cambio, rico en elementos conjuntivos, fibras y células nerviosas. Este investigador hace partir el cuadro doloroso del referido sector.

Pues bien, sin duda alguna, el *cístico es un punto de partida de reflejos;* lo atestigua la reacción de los operados con anestesia local, esplácnica, raquianestesia, en el momento de disecar, en las proximidades del vestíbulo, y cuando se tracciona el conducto durante las maniobras de aislamiento. El paciente se queja de dolores, tiene náuseas y vómitos.

La irritación de los nervios de la encrucijada, su inflamación crónica ofi-

Figura N° 9.



Esquema N° 9.

Figura N° 8.
Esquemática. Sindrome anatómico.
Litiasis única del hepático. La vesícula contiene cálculos facetados, mixtos; el conducto hepático alberga un cálculo de forma y volumen de proyectil de Winchester; el colédoco no tiene concreciones; la papila comunica ampliamente con el duodeno.

Figura No° 9
Esquema N° 9
Colangiografía operatoria. Litiasis única del hepático. Sindrome anatómico.
Pertenece a la paciente de la figura 8. El lipiodol inyectado a través del cístico (Cis) ha caído totalmente al duodeno y yeyuno (Y). El sistema del hepático no se ha inyectado; el colédoco (C) se ve en su parte terminal; la papila de Vater (P) es permeable. La flecha (⟶) marca el sitio del cálculo que se opuso a la ascensión del lipiodol.

cia como en los neuromas de los amputados o en el espasmo pilórico de los ulcerosos del estómago y duodeno. Así, como en los primeros se contraen dolorosamente los músculos vecinos y en los últimos el anillo muscular próximo a la úlcera, justo es pensar que el *conducto hepático,* como segmento más próximo, sea el que se contraiga. La presencia de un cálculo en el cístico o vestíbulo, las adherencias que adosan el cístico al hepático, estimulan la rica red nerviosa de estos dominios; la irritación se traduce por la contracción espástica del conducto hepático y la estasis correspondiente en las ramificaciones intrahepáticas.

La observación de este enfermo tiene singular valor, puesto que pocas veces se ha visto, en nuestro servicio, una subintración de ataques tan alarmante y pertinaz. El pobre enfermo era presa de varias crisis diarias, más o menos fugaces, pero con los caracteres generales del cólico hepático.

Ejemplos de este orden se presentan de tarde en tarde. Son pruebas, sin duda, de que el cálculo no necesita estar dentro del hepático-colédoco para que obstaculice el libre curso de la bilis; empero, es necesario admitir un factor sobreagregado, complementario, que cierra más aun el paso. Ese factor es la contracción del hepático, provocada por la lesión de vecindad, similar a los espasmos del píloro y sus adyacencias, ocasionadas por lesiones ulcerosas o procesos yuxtaduodenales.

Los fundamentos incontrovertibles de la participación del factor funcional, en el estasis a nivel del hepático, lo da la colangiografía operatoria, al demostrar un sistema intraglandular dilatado, a la par de un colédoco normal, que drena libremente su contenido hacia el duodeno, desde luego, no se perderá de vista que son pacientes ictéricos.

C. Sindrome anatómico. El sindrome anatómico, excluída toda neoplasia o proceso cicatrizal, depende de la litiasis.

La litiasis del conducto hepático es excepcional. En la serie personal he encontrado dos casos de litiasis exclusiva del conducto hepático: una observación de cálculo único y otra de concreciones múltiples.

1° Litiasis única del hepático (fig. 8). La historia clínica tiene gran interés y es la siguiente:

VI Serie, N° 9, N. O. de B., 43 años: ingresó en Enero de 1939. Multípara. A los 30 años entró en menopausia.

Desde hace seis años tenía crisis de cólico hepático; en los intervalos acusó síntomas dispépticos. En los últimos tiempos los ataques fueron subintrantes, acompañados de vómitos biliosos e ictericia. Ingresó al servicio ictérica y con signos francos de insuficiencia hepática. Se la intervino dos meses después, decolorada y en buenas condiciones, bajo el diagnóstico de litiasis del colédoco.

En la intervención se observó una vesícula repleta de cálculos mixtos; el conducto cístico permitió apenas el paso de un estilete delgado. La C. O. demostró el colédoco y la papila libre de todo obstáculo empero, el sistema del hepático no se vió (fig. 8). La palpación reveló una dureza en el seno del hígado, en dirección al hepático. Previa coledocotomía transversal se extrajo un cálculo del tamaño y forma de bala de Winchester; el cabo romo miraba hacia abajo (fig. 9).

La paciente en cuestión ingresó con una ictericia por retención; la colangiografía operatoria demostró la ausencia de obstáculo en el colédoco y el inmediato drenaje de todo el lipiodol al duodeno; en cambio, el sistema del hepático no se inyectó. El hecho contrasta con la regularidad con que se ve el sistema del hepático, en todos los obstáculos situados a lo largo del colédoco, aun fuera de la ictericia.

Lógico era suponer un obstáculo por encima de la encrucijada cístico-hépatocoledociana. En efecto, el cálculo único taponaba el hepático, constituyendo un serio impedimento al ascenso de la substancia de contraste.

El caso excepcional es muy instructivo. Prueba, en forma concluyente, la imperiosa necesidad de tener en cuenta el pasado clínico del paciente y asociar, sobre todo en casos de interpretación

dificil, todos los medios exploratorios a nuestro alcance.

2° Litiasis múltiple del hepático: La historia clínica de la única observación de la serie es la siguiente.

IV Serie, N° 46, I. H., ingresó en Agosto de 1936, 27 años de edad. Tifus a los 23 años, multípara. Las crisis dolorosas se iniciaron un año antes del ingreso; han sido frecuentes, acompañadas de vómitos abundantes, sin ictericia.

En la intervención quirúrgica se comprobó una vesícula perforada hacia el hígado; el órgano estaba repleto de cálculos mixtos, del tamaño de granos de maíz; muchas concreciones estaban incrustadas en pleno parénquima hepático. El conducto cístico, que fué erróneamente tomado por el colédoco, cruzaba "a manera de banda" la vía biliar principal y desembocaba en su borde externo, a un nivel bajo; una serie de concreciones, similares a los de la vesícula, estaban escalonados a lo largo de su trayecto. La colangiografía operatoria rectificó el error e informó que el conducto hepático era el asiento de un semillero de cálculos, facetados, poliédricos, del tamaño medio de garbanzos (imagen en panal de abejas); el conducto colédoco no tenía cálculos (fig. 10).

Los conmemorativos de la paciente no daban una base firme para pensar en la litiasis del colédoco. Durante el acto operatorio se tuvo a la vista un conducto del grosor del meñique en el cual se palpaban concreciones. Se pensó que fuese el colédoco por las relaciones que guardaba con el duodeno. Después de abrirlo se extrajeron varios cálculos; la pinza penetró en una cavidad amplia, que se creyó fuese al duodeno. La colangiografía operatoria no sólo identificó el cístico implantado anormalmente, sino que permitió el reconocimiento de la litiasis múltiple del hepático, que, a buen seguro, sin su concurso hubiera pasado inadvertida.

En esta observación singular, en contraposición de la anterior (litiasis única del hepático), la substancia de contraste se escurrió fácilmente entre las concreciones separadas por espacios más o menos amplios, para dar la imagen típica de "panal de abeja."

Figura N° 10.

Esquema N° 10.

Sindrome anatómico. Colangiografía operatoria. Litiasis múltiple del conducto hepático y sus ramas. La inyección de lipiodol fué practicada por el tubo (T), cuya rama penetra en un cístico que cruza la vía biliar "a guisa de banda", para desembocar en el borde interno de su segmento retroduodenal. El conducto hepático y sus ramas tienen imágenes lacunares (Cal) que dan un aspecto de "panal de abejas"; el colédoco (C) menos dilatado, está libre de concreciones; por la papila (P) no ha pasado lipiodol.

He presentado ante la Honorable Asamblea del Colegio Internacional de Cirujanos un bosquejo de fisiopatología del hepático, con observaciones de todos los días, en las cuales se han tenido muy en cuenta la evolución del proceso, las lesiones patológicas de la vesícula y sobre todo el estado anátomo-funcional de la vía excretoria principal, mediante la colangiografía operatoria. Como habrán tenido oportunidad de observar los Señor Congresales, en la ponencia hay espacios claros y mucha deficiencia, justificables en los primeros pasos, en un campo un tanto virgen, donde recién empiezan a destacarse fenómenos concretos, tanto en el orden normal como patológico, inadvertidos hasta una fecha reciente y cuya existencia se funda en la objetividad, pero que en el estado actual de las cosas, no pueden excluirse objeciones en lo que respecta a su interpretación.

Quiero recalcar que tuve reparo de hablar sobre patología del hepático, es decir de un sindrome hepaticiano, permítaseme el neologismo, imitando al ya conocido y aceptado de sindrome coledociano. Las evidentes funciones propulsora y defensiva del sistema del hepático permiten suponer circunstancias patológicas, en que dicho mecanismo fisiológico se falsee y dan bases suficientes para destacar sus perturbaciones del resto del sistema excretorio. "Lo que es verdad en fisiología, lo es en medicina, si no, no es verdad" (Houssay).

Ahora bien; en este orden de cosas: ¿Es posible identificar el sindrome del hepático clínicamente? Existen signos que permiten desglosarlo del capítulo del sindrome coledociano, con el cual, hor por hoy, se confunde? Esta discriminación será la labor del futuro y en la búsqueda se aportarán seguramente nuevas observaciones, que fundamentarán la razón de ser de un nuevo aspecto de las colangiopatías.

Si por ahora no hay base clínica que independice el sindrome acusado por la colangiografía operatoria, en cambio se demuestra, una vez más, la fecundidad del punto de vista fisiológico, al observar la substancia viviente en plena función normal o perturbada. Es seguir el pensamiento moderno que busca la existencia en la función misma, y la verdad, en las múltiples circunstancias o acontecimientos que se suceden en ella. Es asimismo la expresión más acabada, del valor que tiene el estudio de la materia viva, para la solución de los problemas humanos.

SUMARIO

El A. sostiene que el Hepático tiene un sistema muscular que: (1) se opone al reflujo biliar en el momento de la contraccion cistica; (2) es propulsor de la vía excretoria principal. Este hecho es de importancia primordial para plantear las indicaciones de la colecistoduodenostomía. Si el sistema del hepático está vencido, puede haber reflujo que infecte.

Presenta resultados de vivisecciones i de observaciones clínicas (con colangiografías) en apoyo de sus tesis.

RÉSUMÉ

L'A. soutient que le conduit hépatique a un système musculaire qui s'oppose au reflux au moment de la contraction vésiculaire et qui est propulseur de la bile dans la voie principale d'excretion. Ce fait est d'importance primordiale pour poser les indications de la cholecysto duodénostomie, car si la musculature de l'hépatique est vaincue il pourrait avoir du reflux.

Il présente des résultats de vivisection et des observations cliniques (avec des colangiographies) a l'appui de sa thèse.

Compression Fractures of The Spine*

W. P. SAMMONS, M.D., F.A.C.S., F.I.C.S.
WHEELING, W. VA.

FRACTURES of the vertebral column, comprise over 6 per cent of all fractures throughout the skeleton. Their importance is not confined to their effect on bony structure and function, but includes the serious possibility of damage to the spinal cord. Traumatic lesions of the cord cannot be repaired and often, when at all extensive, are grave tragedies. Cord injury probably occurs not more often than once in ten fracture dislocations.

In dealing with vertebral body injuries, we must keep constantly in mind that the bodies are weight-bearing structures, the permanent deformity of which will seriously alter the status of the column by changing the spinal curves; and abnormal curves subject ligaments and muscles to disabling strain. Failure to correct vertebral body deformity is responsible for more of the poor results so commonly seen than all other factors combined.

Injuries of the back have long been such a fertile resource to those claiming damages as a result of an accident, that the surgeon looks askance, and rightly so, at any claimant who complains of pain, tenderness, limitation of motion, etc., in the back. However, the honest patient must not be so regarded, even when his symptoms appear out of proportion to the severity of the injury. Therefore, every individual who has been subjected to an injury of his spine, should be carefully x-rayed.

*Presented at the Third International Assembly of the International College of Surgeons held in Mexico City, August 1941.

ETIOLOGY

No age is exempt. Vertebral fracture is not common in the first two decades; is most common in the third and fourth. The most severe injuries are to be found in the coal mining sections and are those caused by falling stones. The miner is at his work in a stooping position and the force—usually falling rock, varying in amounts from a few pounds to several tons—is applied from above. A lever is formed above and below: the shoulders are driven toward the knees; the pelvis is fixed and the ribs fix the dorsal spine. Thus the body of the vertebrae is crushed between the opposing forces. The same leverage takes place when the patient falls and lands upon the feet or buttocks, or upon the head, neck or shoulders; when, in an automobile accident, the patient is thrown against the car or the ground; when, in diving into shallow water, the patient strikes the back of the head or neck against the bottom.

In the young the spine is well protected against injury by the elasticity of the intervertebral discs, which allow a marked degree of bending strain without undue stress on the body of the vertebrae. As age increases, the elasticity of these discs decreases and bones become more highly calcified and brittle, and the margin of safety is reduced. There are three locations in the spine where a compression fracture is prone to occur: the upper cervical region, the upper dorsal region, and the dorsolumbar region. The fractures occurring in the lower part of the spine are not so serious. About two-thirds of all compression fractures occur

in the lower spine. A larger percentage occur in the 11th and 12th dorsal and the 1st and 2nd lumbar. Isolated cases may occur anywhere.

SYMPTOMS

The symptoms of compression fracture of the spine vary from no external evidence whatever to total flaccid motor and sensory paralysis. A certain opinion cannot be expressed within the first few days as during that period the symptoms are apt to increase or decrease. The most frequent symptom is pain, increased on motion, and the chief sign is irregularity of the line of the spinous processes, the usual deformity being kyphosis.

If the cord has been damaged, motor and sensory paralysis, either partial or complete, will be found up to the level of the lesion. The anesthesia corresponds, usually, to the motor loss, with an area of hyperesthesia just above the level of the lesion. This hyperesthesia zone is the best single index of the height of the damage in any case. In a complete transverse lesion the symptoms appear immediately following the injury; whereas, if a partial lesion is present an interval may have elapsed before the symptoms develop. In a complete transverse lesion the motor paralysis is found to be complete and paralyzed muscles are flaccid; if the lesion is a partial one the paralysis is limited: some muscles of the limbs are paralyzed, others are not, and there is often muscle spasm in the affected limb. In a complete transverse lesion sensation is entirely gone; in a partial lesion some sensation is felt. The knee jerks are absent in a complete lesion; in a partial lesion they are usually present. In a transverse lesion visceral paralysis is complete; in a partial lesion visceral paralysis is not always present. Sweating and involuntary twitching are seen more commonly in the complete lesion.

DIAGNOSIS

Until a few years ago, perhaps 75 per cent of compression fractures of the spine were overlooked by the average practitioner, unless, following an injury, the patient complained severely of his back or had an associated paralysis which prompted x-ray studies. Many of these patients were left with permanent back injuries.

Besides x-ray findings and the manner of the injury and the symptoms, one of the most important points in differential diagnosis is abdominal pain and rigidity. Visceral injuries following an accident have symptoms similar to those found in compression fractures. In compression fractures with abdominal pain and rigidity there is, as a rule, no localized tenderness.

X-ray studies cannot be overemphasized; anteroposterior and principally lateral studies are necessary in the diagnosis of compression fractures, and are absolutely essential even in apparently trivial back injuries. A moderate degree of compression of the superior surface of the body will not be recognized in an anteroposterior view. The lateral view is the most satisfactory one for determining the size, shape and, to a great extent, the internal structure of the various bodies, as well as for showing the intervertebral spaces. This view is the only one by means of which one may obtain an accurate idea of laminae and spinous processes. Increased density or actual breaking along the superior margin, usually anterior to the vertebral body under question, may frequently be shown, even in cases of very slight fracture. Later examination will show a certain amount of easily visible callous or new bone deposited in the area of compressed bone. Lipping of the anterior margin of the body, similar to hypertrophic changes and suggesting an old fracture, is found in most of these cases.

PROGNOSIS

The prognosis depends upon the degree of injury to the spinal cord. It is less grave than it was thought to be a few years ago. In general, the nearer the fracture approaches the medulla oblongata and the foramen magnum the more serious is the outcome. In cervical fracture death is due to shock and pressure on the medulla. In upper dorsal fractures patients ordinarily die in a few days or weeks from hypostatic pneumonia. In fractures of the dorsal and lumbar regions patients die from cystitis, pyelitis and exhaustion toxemia. The prognosis in these cases is a matter of the care given more than it is of the extent of the lesion. Recognized in time and properly supported, these cases do remarkably well. If they are neglected the patient may become and remain permanently disabled. The reduction of the vertebral body fracture has, during the past few years, been perfected to such a degree that the surgeon may deal with the injury confident of considerable success.

TREATMENT

Perhaps the most important factor in the treatment is proper care of the patient's mental state. The patient's condition should be described to him truthfully and accurately. He should be told that he has not a broken back in the customary sense of the word, but that he has a lesser injury of one of his vertebrae. He can be told that the prognosis is excellent, but that he must follow instructions explicitly.

First aid.—In the majority of spinal fractures, the dangerous movement is forward flexion of the trunk or neck. Certain rules of conduct must be laid down for the guidance of those who may find themselves responsible for the emergency treatment and transport of an individual with a suspected or proved fracture of the spine.

1. The public should be taught that an injured person who has lost the use of his arms or legs should not be lifted or carried before the arrival of a doctor or one trained in first aid.

2. In a fracture of the dorsolumbar region, the patient should be carefully rolled over on his face and a pillow or folded pad placed under the upper part of the chest. This maneuver alone may be sufficient to reduce a fracture dislocation. In lifting the patient on to a stretcher the position of extension of the spine should be maintained. If a stretcher is not available the victim should be carried to the first aid post in a prone position.

3. When a spinal fracture is accompanied by a severe chest or head injury, or by fracture of the lower limbs, the prone position may be impracticable or dangerous. In such circumstances the spine should be extended by placing a firm support under the back at the level of the injury. During transfer to the stretcher care must again be taken to avoid any movement or flexion.

4. In a fracture of the cervical spine, the prone position is also contraindicated. Extension should be temporarily obtained by placing a small pad underneath the neck. It should be remembered that lifting the head to enable the patient to drink from a cup is a dangerous action. When a patient with a high spinal fracture is moved, firm traction should be applied to both the head and the lower limbs.

5. On arrival at the hospital, if the patient is not severely shocked, roentgenograms should be taken without delay. All films should be taken without altering the position of extension for a single moment.

HYPEREXTENSION METHODS

Until comparatively recently, treatment of these fractures has consisted of prolonged rest in bed and fixation with a plaster cast or frame with the hope of obtaining bony union, regardless of deformity. Operative fusion of the spine at the site of fracture also has been carried out with the hope of lessening the marked disability that is the usual result of such fractures. Neither of these methods has proved satisfactory. Within recent years, however, certain corrective methods of treating these cases have been described which bid fair to overcome the gloomy prognosis. These methods, while varying in detail, have this important principle in common: correction of the deformed vertebral body by extreme hyperextension of the spine.

The method of correction described by Davis consists of placing the anesthetized patient prone upon a table with the feet fastened together and suspended by a rope passed through an overhead pulley. The legs are elevated until the pelvis and lower trunk are lifted from the table and pressure is exerted over the site of the fracture, forcibly hyperextending the spine. A body cast is applied with the spine in this position.

Dunlop obtains correction by placing the anesthetized patient face up with the spine hyperextended across a folded sheet passed transversely beneath the body and held taut by two assistants. Strong traction is exerted on the hands and feet of the patient, who is tossed straight up in the air and his weight caught in the taut sheet in the descent, extreme care being exercised to keep the spine in hyperextension.

The Rogers method differs from the above two in that correction is obtained by a gradual hyperextension of the spine by means of an adjustable frame. The patient is placed on the frame with a slight upward convexity; then hyperextension is increased gradually until an angle of 45 to 60 degrees is reached. This takes a week or ten days. A three point jacket is applied, fixing the upper end of the sternum, the anterosuperior spines in front, and the site of the fracture posteriorly. This cast can be applied by the use of a Goldthwaite frame, or simply by suspending the patient prone on a canvas sling with the hyperextension well maintained.

The most recent method is that of Watson Jones, which is practically the same as Boehler's method. It is very simple and is just as effective as the other more complicated ones. It is especially applicable where equipment and assistants are lacking. We adopted this method after a visit to Boehler's Clinic in Vienna 5 years ago.

Two tables are arranged end to end, with the space between slightly greater than the length of the patient's trunk. The front table is raised on blocks or chairs so that it is about 2 feet higher than the other. Twenty or thirty c.c. of 1 per cent novocaine are injected into the hematoma at the fracture site. A general anesthetic is unnecessary and the required position can be maintained much more easily by a conscious patient than by an anesthesized one.

The patient is lifted face downward into such a position that he is gripping the edge of the higher table with arms abducted. The lower table supports his legs as high as the upper thighs, but between the neck and groins there is no support. In this position the spine sags gently into full hyperextension. A plaster of paris cast is now applied with ease over stockinette. Gentle pressure is exerted at the fracture site during application. The plaster should be well molded to the curve of the spine, the sacrum and the iliac crests, and should extend up to the neck, front and back. After the

plaster dries, a window is cut over the epigastric area and over the seat of fracture.

Exercises.—A common cause of weakness, pain and disability, especially in the industrial case, is a marked muscle wasting that takes place during the prolonged period of immobilization. To prevent this, a system of exercises to be carried out daily is strongly recommended. Such exercises restore muscle tone, shorten convalescence, and put the patient in a better physical condition to return to manual labor. Barring complications or associated injuries, the patient may get out of bed on the 4th day, or not later than the 7th day, and may be dismissed from the hospital. Of course the higher the level of the fracture, the less danger is attendant upon early weight bearing. Daily setting-up exercises are very necessary. The cast is worn, on an average, about 4 months. After removal of the cast a Taylor brace is applied to be worn in the daytime for another three or four months.

During the brace period, dorsal extension and pelvic rotation should be practiced with precision. It is not an uncommon experience to see patients complaining of disability due to low back pain where excellent reductions were obtained, fixation adequate, and bone and ligament repair complete, yet whose muscles were atrophied and stiff and whose deep lordosis remained. Exercise alone will prevent this hazard. The patient must be led to understand that much depends upon this functional treatment. For a good result, there must be no laziness nor indifference on the part of the patient. It is generally agreed that early ambulatory activity should be encouraged in compression fractures until there is clinical and roentgenographic evidence of consolidation of the fracture. This will generally mean that the spine must be immobilized and protected for not less than four months—better, eight months—from the time of the injury.

HYPEREXTENSION FRACTURE

With hyperextension fracture, the method of reduction described is definitely contraindicated, for the obvious reason that further hyperextension of the spine may produce cord damage. In these cases the jacket should be applied in the ordinary neutral position.

COMPLICATIONS OF CORD INJURY

In the treatment of fractures associated with cord injury, an essential element is the aseptic control of the bladder, together with the prevention of bed sores. In the first week fatality is generally due to the trauma itself, but thereafter it is due to complications, the chief of which is sepsis. Therefore the prevention of sepsis must be one of the primary objects of treatment.

The cord will be uninjured, slightly injured, or seriously injured. If the cord is uninjured, the bony parts are fairly easily replaced by manipulation. If the cord is injured, the advisability of operative interference will depend upon whether it is partial or complete. If there are evidences of a transverse lesion, operation is unavailing and obviously illogical, for the cord cannot be repaired. It is therefore necessary to distinguish between the signs of a transverse lesion and those of a partial lesion.

In severe compression fractures — severe enough to damage the cord—usually irreparable damage or injury has been done either by a distinct crush of the cord or hemorrhage into the cord. The hemorrhage often takes place at some distance from the seat of the chief lesion, so that even if the seat of the crush of the spine is well explored by operation, damaging lesions would still remain unrevealed. It is also the result of experi-

ence that removal, by operation, of the laminae and spines of the vertebrae in the region of fracture almost never reveals any remediable condition or affords any evidence of the exact seat of the lesions or their extent. The reason is that at the seat of the crush of cord, whether partial or complete, the dura often remains intact and untorn and an extradural hemorrhage is uncommon. After a laminectomy, the surgeon is as much in doubt as he was before.

With our present knowledge of the pathology of this fracture, and excepting cases of fracture with pressure upon the cauda equina and pressure where there is a partial lesion of the cord, there can be no doubt that the best treatment for compression fractures of the vertebrae is by the conservative method. Reduction should be done promptly, mainly to avoid irremediable softening of the cord from pressure, which may occur even within 48 hours. Immobilization of the spine in the corrected position should follow immediately. In commenting upon compression fractures, the late John B. Murphy once said, "If the injury occurred above the cauda equina and instantly produced complete annular paralysis of both motion and sensation, it would mean that the cord was completely severed and since the true cord has no power of regeneration, there would be no improvement with operation, nor would there be any without operation. Therefore, better not operate."

FRACTURES IN THE CERVICAL REGION

In correction of fracture dislocation in the cervical region, we have the choice of two methods: 1. Reduction by Manipulation. The technic devised by A. S. Taylor of New York has been successfully used for some years. In Taylor's manipulation, the patient is placed on a fracture table and a halter applied to the head. A stout cord or rope is attached to the side rings of the halter passed around the waist of the surgeon. With the neck securely controlled between the surgeon's hands, steady traction is now exerted by a backward movement of the body. Countertraction is provided by the fixation of the lower limbs to the traction bars of the table. The traction is first applied in very slight flexion in order to disengage the articular processes. When the neck is felt to elongate, the head and upper part of the spine are allowed to drop back into position of extension. The accuracy of the reduction is checked in a lateral roentgenogram, and the head and neck are then fixed in a plaster cast.

2. Gradual Reduction by Continuous Traction: A Glisson sling may be used or traction may be applied to the skull by special tongs which perforate the outer table. The points of attachment to the skull should be chosen so that the pull is in the long axis of the cervical spine. Countertraction is provided by raising the head of the bed. A weight of 10 or 15 pounds may be required for a short time to correct gross displacement. In recent fractures, the reduction takes place almost immediately. In fractures of some weeks standing, correction is a gradual process. In cases without cord injury, if the patient is in good condition, the extension can be removed after the reduction has been confirmed in the lateral roentgenogram and a plaster jacket applied. In severe cord lesions, it is wise to keep up light traction (that is, 4 or 5 pounds) for 10 to 14 days, and, if the patient survives the critical period, to apply the plaster at a later stage. The method of skeletal traction enables a paraplegic patient to be nursed with safety and comfort. In this respect alone, it undoubtedly represents an important advance in the technic of treating such fractures.

Fractures of the posterior arch of the

atlas are often overlooked. Stiffness of the neck and occipital pain following a fall on the head are symptoms that arouse suspicion. When recognized, a plaster 'doll's collar' should be worn 4 to 6 weeks, but the patient can be allowed to lead a free ambulatory existence. Fracture of the odontoid process of the axis may occur or may be associated with fracture of the atlas. With prompt and efficient immobilization, sound fibrous or bony union takes place in 8 to 12 weeks in a well fitting body cast that includes the head. Results are excellent in early cases.

PARAPLEGIA

In paraplegic cases, although the fate of the cord has been determined from the moment of injury, the correction of gross displacement is no less essential. The precarious condition of many patients the first few days, however, makes the ordinary reduction and application of a plaster jacket a distressing and hazardous undertaking. Where for good reasons it is necessary to veto or postpone any attempt at complete correction, the patient should be placed in the hyperextended position in a well padded bivalved plaster cast in which he can be turned repeatedly without flexing the spine. Hyperextension, to a degree, can be obtained by inserting a rolled blanket under the mattress at the upper level of the lumbar spine.

The modern methods of reduction of fracture-dislocations have entirely supplanted laminectomy. Despite increasing experience in handling spinal fractures, the mortality in cases with neural involvement continues high. As stated above, a number of patients die in the first few days from shock or from the effect of associated injuries. Of the survivors, some die from such complications as pneumonia, urinary tract infection, exhaustion toxemia from bed sores, etc. The prevention of bed sores and contractures, and the care of the bladder and bowel function demand skilled nursing. The areas of skin in contact with pressure should be constantly shifted.

The prevention of urinary tract infection is the greatest responsibility of all. In a few patients the bladder may be emptied by pressure or overflow, but in the majority some form of regular catheterization is necessary. A safe and effective method is the use of the indwelling catheter, changed every five or six days, or by suprapubic drainage. The bowels should be kept active and overdistention avoided. The paralyzed limbs should be supported in the standard positions and, after the stage of spinal block is over, all joints should be moved through a normal range of motion daily. Energetic stretching should be condemned, as it tends to increase muscle spasm. Gentle massage by a competent masseur is well worthwhile and helps to lessen disability.

SUMMARY

Fractures of the vertebral column comprise 6 per cent of all fractures of the skeleton. Although no age is exempt, individuals in the third and fourth decades are most susceptible. Vertebral column fractures occur chiefly in the upper cervical, the upper dorsal, and the dorsolumbar regions, about two-thirds of them occurring in the lower spine.

Etiology, diagnosis, and treatment are described. The prognosis depends upon the degree of injury to the spinal cord. The author found the Watson Jones method of hyperextension to be the most effective. The patient's mental state is the most important factor in treatment: he must have his condition described to him and be told his prognosis is excellent if he will follow directions explicitly. A

system of daily exercises is imperative to prevent muscle wasting.

Treatment of hyperextension fractures, fractures associated with cord injury, fractures of the cervical region, and paraplegia is discussed.

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SUMARIO

Compresión de Fracturas de la Espina

Fracturas de la columna vertebral corresponden al 6% de todas las fracturas del esqueleto. Auque no hay ecepción en edad, individuos en la tercera o cuarta decada son mas susceptibles. Fracturas de la columna vertebral se presentan principalmente en la cervical superior, en la dorsal superior, y en la region dorsolumbar, como dos terceras de ellas ocurren en la porción inferior de la espina.

Etiología, diagnóstico, y tratamiento son descritos. El prognóstico depende del grado de la lesión a la medula espinal. El autor encontro el metodo de Watson Jones de iperextensión ser el mas efectivo. El estado mental del enfermo es el factor mas importante en el tratamiento: a él se le debe explicar su condición y decirsele que el prognóstico es excelente si sigue direcciones esplícitas. El sistema de ejercicio diario es imperativo para evitar atrófia muscular.

Tratamientos de fracturas de iperextensión, fracturas asociadas con lesiones de la medula, fracturas de la region cervical, y paraplegia son discutido.

RÉSUMÉ

Six pour cent de toutes les fractures sont des fractures de la colonne vertébrale. Aucun âge n'est exempt, héanmoins les individus de la troisième et quatrième décades sont les plus susceptibles. Ces fractures sont plus frequentes dans les régions cervicale, dorsale supérieure et dorso lombaire. Les deux tiers intéressent la partie inférieure de la colonne vertébrale.

L'auteur décrit l'étiologie, le diagnostic et le traitement de ces fractures. Le pronostic dépend du degré des lésions de la moelle épinière. L'auteur considère la méthode de Watson Jones, l'hyperextension comme la méthode de choix. L'état mental du malade est un facteur important du traitement. On doit le rassure et veiller à ce qu'il se conforme explicitement à tous les détails quon luiordonne. Enfin d'empêcher l'atrophie des muscles, on prescrira un système d'exercises journaliers.

L'auteur discute l'hyperextension de ces fractures, les lésions de la moelle qui si frequemment les accompangnent, le traitement des fractures de la région cervicale et la paraplégie.

Some Surgical Problems of the Present War

ALBERT BEHREND, M.D., F.A.C.S.
CAPTAIN, MEDICAL CORPS, U. S. ARMY

HIPPOCRATES, the Father of Medicine, said, "He who would become a surgeon therefore should join the Army and follow it." We have had the good fortune to pursue the study of the surgical art in a time of peace. War is no longer necessary as an excuse to train surgeons, but today trained surgeons are needed more than ever before to treat the victims of war. For this is total war, and non-combatants—men, women and children—are exposed to its dangers in a degree almost equal to those attached to the armed forces. Before it ends it is quite possible that most of the surgeons of this country will be practicing war surgery, although not all of them will practice it as members of the Army.

Foreign bombs may drop on American cities this year, the President has warned, and as the picture of war on the sea, in the air, and in far distant places gradually unfolds, many of his forecasts of the past few years now seem almost prophetic. If this one, too, comes true, and it seems altogether likely that it will, we may all be called upon to practice war surgery. For as Cheever[1] has said, "the foe is bending all the agencies of the physio-chemical and psychologic sciences to his purpose and showers death in its most ghastly forms on man, and destruction on the monuments of his civilization, to a degree which is callously designed to involve a nation in its totality if it refuses to submit. Gone or nearly so, on his part at least, are the mitigations of the so-called rules of war, the chivalries of equal combat among men. The unarmed, the defenseless, the weak, the aged, the young of either sex have no privilege of even partial exemption, but rather suffer the more because they have not the strength for self-defense."

The time for complacency is long past. "It Can't Happen Here" is a doctrine that has lost campaigns and cost empires. Caesar tells of a great battle he won by throwing a pontoon bridge across a river in the dead of night so that he could surprise the enemy by attacking at dawn. The surprise was complete and so was the victory, for the enemy did not believe the bridge would be built until the following day, and Caesar remarked that "men easily believe that which they wish." So, even if you believe your community immune from attack, you must be prepared for the possibility of bombing.

Modern war has produced many new problems to be solved by the Medical Department of the Army. The fluidity of troop movements offers problems in the care of the sick and wounded that were unknown in the last war. The greater use of aircraft, tanks, and ships using gasoline and fuel oil has greatly increased the number of severe burns. The evacuation of the wounded from a tank where space is small and the vehicle practically sealed while in operation, poses a difficult problem. How practical are mobile surgical units? What type of vehicle will best serve as a carrier for the wounded where roads are few and distances great? How close to the front can surgery be safely performed? What time-interval between being wounded and being operated upon gives the best results? How can shock best be treated?

* Read at the Meeting of the Surgeons' Travel Club, Boston, Mass. March 27, 1942.

By whom and where shall this treatment be instituted? What will be done to combat wound infection? What is the drug of choice? What about the prevention of tetanus?

These are but a few of the myriad problems that concern the Medical Department of the Army. Some of them have already been solved. The answer to many others must yet be sought.

SHOCK

Shock is the common denominator of most war wounds. Its prompt and intelligent treatment is essential. Shock results in stagnation of blood in the capillaries, damage to capillary endothelium as a result of local anoxia, and leakage of fluid through the damaged capillary wall. When uncomplicated by severe hemorrhage it is best treated by the administration of blood plasma, for the body is far better able to withstand the loss of the cellular component of the blood than the fluid. As Riggs and I[2] have shown, unrelieved generalized tissue anoxia rapidly produces irreversible changes, to which the delicate nerve tissues are particularly susceptible.

The administration of saline and glucose solutions to a patient in shock is at best only a very temporary aid, and may often be harmful. The development of substitutes for blood or blood plasma holds promise. Among the most important of these are human and bovine albumin, and solutions of fruit pectin. According to Cohn,[3] human and bovine albumin can be prepared from plasma or serum containing so much hemolyzed blood as to render it unsuitable for transfusion. These substances exert a marked osmotic effect, drawing water into blood vessels, and since the molecule of bovine albumin is so similar to that of human it is hoped that it may be used as a substitute. Clinical trials of pectin by Hartman and his co-workers[4] suggest that this substance may also be used as a valuable substitute when blood plasma is not available.

The equipment for the administration of plasma in the Army and Navy has been developed by physicians[5] working in co-operation with representatives of the Medical Departments of the Army and Navy. The blood is collected, processed and packaged by The American Red Cross.

The package consists of two 400 cc. bottles covered with hood-type rubber stoppers and complete equipment for intravenous administration, sealed in metal cans and packaged in a tape-sealed water-proofed fiberboard box. One vacuum bottle contains the dried solids obtained from 300 cc. of citrated plasma. This bottle is fitted with a cloth tape for suspending it in the inverted position while the plasma is being injected. The other bottle, sealed without a vacuum, contains 300 cc. of sterile pyrogen-free water.

The plasma is made ready for use by inserting a double-ended needle through the stopper of the bottle containing the distilled water. This bottle is then inverted, and the other end of the needle is plunged into the stopper of the dried plasma bottle. An airway is then inserted into the distilled water bottle. The vacuum in the plasma bottle causes the water to flow in, and the plasma dissolves within two minutes. The airway and the intravenous injection set are then connected to the plasma bottle and the plasma is ready to administer.

Blood plasma may be given as an isotonic, hypertonic, or hypotonic solution. Its use in the hypertonic form (3-4 times isotonic strength) may prove to be of great life-saving importance when administered by means of a 50 cc. or a 100 cc. syringe at the battalion aid station, i.e. within a quarter to a half mile from the scene of action. Since shock,

when severe and prolonged, may become an irreversible state such early treatment may save the victim until more definitive treatment can be given.

WOUNDS

The treatment of war wounds is so vast a subject that in such a paper generalizations are necessary. The principles governing the treatment of war wounds are those of good surgery with but a few modifications. This implies treatment of shock, débridement of the wound, and removal of foreign bodies if their presence will cause greater harm than the effort required to remove them.

The removal of foreign bodies from those wounded at Pearl Harbor was greatly facilitated by the use of a localizing device, probably similar to the "boloscope" described by von der Plaats.[6] This utilizes a roentgen tube below the operating table and a screen above it enclosed in a cryptoscope so that roentgenoscopic examination is possible in ordinary light. The surgeon is able to see two small converging light cones directed toward the foreign body and intersecting in it. The distance between the two ray cones on the skin indicates the depth of the foreign body.

Largely because of sulfonamide drug therapy, the mortality and morbidity of war wounds should be lower than ever before in history. The use of these drugs will doubtless help to eliminate the widespread abuse of antiseptics in the early treatment of wounds. Every soldier going into battle in our Army will receive a tin containing 12 tablets of sulfanilamide with instructions as to how and when they are to be used. In addition powdered sulfanilamide may be distributed for application directly into the wound. Since every soldier will have had at least three immunizing doses of tetanus toxoid, cases of lock-jaw should be rare.

According to Broster,[7] the high explosive bomb, which with the trench mortar shell is the most destructive weapon of this war, causes damage, often among civilians by: (1) Direct hits, (2) Blast, (3) Crush injuries from fallen masonry, (4) Burns, (5) Splinter wounds from bomb casing and glass.

When compound fractures occur, Jolly[8] and Trueta[9] agree that the closed plaster treatment is valuable. They advocate wide excision of the injured area, attempt to reduce the fracture, light covering of the wound with vaseline gauze without primary suture and application of unpadded plaster of Paris splints. This technique, popularized in Spain, has been used in England, although Wilson[10] had added sulfanilamide or sulfathiazole crystals locally applied to the wound. Latest reports from the National Research Council[11] advise that sulfanilamide is the drug of choice.

BURNS

Burns are a particularly common and serious type of war wound. Burns of the face and hands are frequent among aviators. Incendiaries have caused many burns among civilians in Great Britain. "Flash burns" were common among sailors in the attack on Pearl Harbor. The great number of combat vehicles using combustible fuel has added to the importance of burn wounds.

Shock and infection are the major complications of burn wounds. As a first aid dressing, the National Research Council recommends a water-soluble jelly containing 10 percent tannic acid and 5 percent sulfadiazine. Hands, face and genitalia are to be covered with a 5 percent emulsion of sulfadiazine or boric ointment. These should be and doubtless will be, carried on every combat vehicle. Administration of 500 cc. of plasma is advised if available at the first aid station.

Definitive treatment will be given wherever the patient remains long enough to carry it out. This comprises:

1. Morphine
2. Plasma transfusion 1000-2000 cc. in 24 hours
3. Saline and glucose as required to combat hemoconcentration (hematocrit over 70 percent)
4. Whole blood transfusion when blood has been lost from some other injury.
5. Care of the burned area, which comprises,
   a. Removal or cutting away clothing
   b. Opening of blisters and excision of necrotic tissue
   c. Cleansing the surface with ivory soap and water, using cotton pledgets, without scrubbing
   d. Rinsing the burned surface freely with physiologic saline
   e. Tanning, using 10 percent tannic acid for the first spray, followed immediately by a spray with a mixture of equal parts of 10 percent tannic acid and 10 percent silver nitrate. This is applied every half hour for four applications.

On burns of the face, hands and genitalia the application of an emulsion of 5 percent sulfadiazine or boric ointment is advised.

As soon as oral feeding can be started, sulfadiazine, 1 gm. every 6 hours should be given for 10 days. If sulfadiazine is not available, sulfanilamide or sulfathiazole may be used in the same dosage, the latter being the least desirable. When infection occurs under the crust, the crust must be carefully removed and the exposed surface dusted daily with sulfanilamide crystals.

Skin grafts, when required, should be applied as soon as a clean surface on which to graft is obtained in order to avoid contractures.

The method of treating burns outlined above has been tried and found to be acceptable. Other methods and other drugs are receiving careful investigation at this moment. They include the use of a mixture of 3 percent sulfadiazine and 8 percent triethanolamine by Pickrell,[12] the envelope method by Bunyan,[13] and the triple dye method (gentian violet 2 percent, brilliant green 1 percent, acriflavine 0.10 percent) by Wakeley.[14]

SUMMARY

A brief review of some of the measures used to combat three common causes of morbidity and mortality in war (shock, wounds and burns), is presented. The standard package and equipment for administering dried blood plasma in the Armed Forces of the United States is described. The routine use of sulfanilamide powder and sulfanilamide tablets by mouth for the treatment of war wounds is discussed. The treatment of burns as advocated by the National Research Council is also described.

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SUMARIO

El autor revisa brevemente algunas de las medidas usadas para combatir las tres causas común de morbilidad y mortalidad en la guerra: shock, heridas y quemaduras. El equipo standard y preparación para administrar plasma sanguineo seco en las fuerzas armadas de los Estados Unidos es descrito. El uso de rutina de los polvos de sufanilamida y de las tabletas por la via oral como tratamiento de las heridas de guerra es discutido. El tratamiento de las quemadas, como aconsejado por el National Research Council es tambien descrito.

RÉSUMÉ

L'auteur passe en revue sommairement quelques uns des procédés employés pour combattre les trois causes communes de morbidité et de mortalité de la guerres; le choc, les blessures et les brûlures. Il décrit le paquet et les accessoires pour l'administration du plasma sanguin desseche employés dans les forces armiées américaines. Il discute aussi l'emploi routinier du sulfanilamide pulvériae et l'ingestion orale des tablettes de sulfanilamide dans le traitement des blessures. Le traitement des brûlures préconisé par le Conseil National de Recherches est analysé, discuté et décrit.

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The Place of Plication in the Treatment of Peritonitis*

THOMAS B. NOBLE, Jr. M.D., F.I.C.S.
INDIANAPOLIS, IND.

ACUTE peritonitis, such as that resulting from a ruptured appendix is rarely fatal, even though widely disseminated. Much research has been done on the hypothesis that the peritonitis itself is the cause of the high mortality rate usually associated with this condition. We see in discussions a merging of the pathologic physiology of obstruction with the definition of peritonitis. Today there is confusion in the discussion of peritonitis which we hope to clarify somewhat in this presentation.

In all widespread peritonitis there is congestion of the intestinal and mesenteric peritoneum with plastic exudate. The inflammatory response is great—as is the ability of the structure to care for bacterial insult. Adhesions between adjacent tissues occur early—first fibrinous, later fibrous. Wherever intestine and mesentery adhere there may be an angulation and resulting constriction of the gut; and usually if contamination by colon bacillus is present, an abscess develops during the early stage of inflammation. In one case of peritonitis there may be any number of such points. Each point becomes a separate entity, capable of producing complete intestinal obstruction or sequelae from a migrating or perforating abscess.

The toxic or septic element of diffuse peritonitis commonly subsides within a short time as a result of the violent and efficient inflammatory reactions, but abscess points produce multiple areas of increasing intestinal obstruction with increasing symptoms during the period of subsidence of peritonitis. With the decrease of danger from peritonitis, the more serious symptoms of increasing obstructions—and they are multiple—enter into the picture so that the patient has seemed to become progressively worse without displaying any sign of the disappearance of the general peritonitis. It seems that we have paid too much attention to peritonitis and too little to the obstructions produced by it. Let us reverse that and put peritonitis in its proper place.

During the early stage of any case of peritonitis it is logical to remove the source of contamination in a manner calculated to conserve the patient's vitality. Obviously a prolonged shocking procedure is contraindicated. This is highly important. A ruptured appendix, for instance, is removed as soon as possible in order to close the opening. Planned treatment can be instituted which will prevent symptoms and absorption from obstructions soon to begin.

Immediately upon the removal of the source of contamination, pituitrin administration is begun. Beginning in the surgery theatre one ampoule of surgical pituitrin is given every hour, (1) until liquid stools result from the injection, or (2) until there is some evidence of shock, or (3) until the abdomen is completely flat with gas being expelled at will. When one of these conditions is secured, the dose is reduced to an ampoule every two to four hours, never less, and is continued until the second elective operation. Liquid diet alone is allowed in the interim. If the patient will spend most of his first two days lying on his face, it will be better for him.

*Presented at the International Assembly of the International College of Surgeons, Mexico, D.F., August, 1941.

Pituitrin will not prevent foci of mesenteric abscesses from forming. It will not prevent areas of constriction from forming at these sites. It will keep gas and liquid on the move so that there is no area of distention to the point of obstructive absorption. Partial obstruction is always seen, but symptoms have been absent simply because the degree of distention has been kept low by means of pituitrin. One hundred ampoules is not an uncommon amount to be given before the second elective step.

Work has been done to show that increased peristalsis increases absorption from the peritoneum. This has been taken as a contraindication for catharsis or increased peristalsis during the exudative stage of early peritonitis. We have learned that pituitrin acts in some respects differently from pitressin. Pituitrin does not increase fluid exudation into the lumen of the bowel. It prevents intraperitoneal exudation or, perhaps, promotes absorption; the mechanism involved does not matter, since the desirable result is obtained. The fluid accumulation from intraperitoneal exudation is an unfortunate aid to extension of the morbid process and must be prevented or relieved. Contrary to many opinions resulting from the study of peristalsis of normal laboratory animals, we have found that in the human peritonitis is reduced in its destructive effects by early constant use of pituitrin. No renal damage or other untoward effects have been noted even in hypertensive individuals. The fact is that diuresis is noted in these cases with subsidence of urinary evidences usually seen with severe infectious processes.

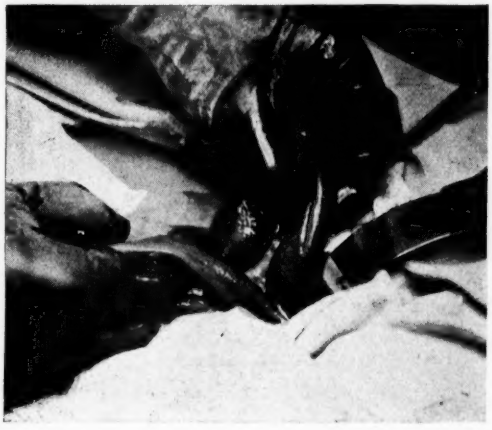
As we have learned, duodenal drainage per os and enterostomy decompression have no place in the treatment of peritonitis. Duodenal drainage dehydrates seriously and cannot affect the pathology of multiple obstructions; it decompresses proximal to the first point of angulation only. Enterostomy can drain only that part—and no more—of the intestine between two areas of obstruction or mesenteric abscess. Other zones obstructed at both ends unaffected by enterostomy destroy the patient. Appendicostomy, being distal to all zones of obstruction, is entirely illogical. None of these three procedures has a place in the treatment of peritonitis, and we avoid their use.

A word here about the uses of the sulfa-drugs. We have used them all systematically and locally in the abdomen, and combined. I believe no demonstrable local improvement resulting from their use can be shown. If given orally, the nausea resulting will give rise to dehydration that more than offsets any good they may do. I believe that at present we have enough information to feel free in discarding them from the treatment of these cases. This is in accordance with our view that the toxic element of peritonitis is not the important one. It is generally accepted now that these drugs will not serve efficiently after inflammatory processes are well established, and the use of them here has had to be after the rupture of the appendix and subsequent to generalized contamination of the peritoneum with staphylococci, streptococci, and colon bacilli. Comparison of results before we used these drugs and after they appeared on the scene has made us feel that they are not necessary and are not a visible or measurable help. A recent popular article has made this view of ours better left unsaid—at least to the public—at present.

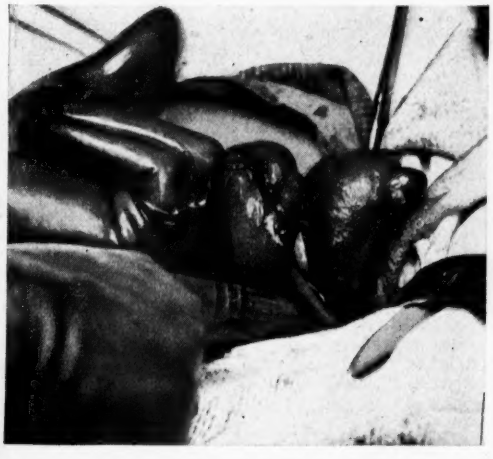
After the removal of the source of the peritonitis and the subsidence of the peritoneal toxic absorption, we have left to be taken the most important therapeutic step. We must aim at the permanent eradication of all degrees of obstruction resulting from the peritonitis which by

now has disappeared. Since the problem is a mechanical one, our method must be surgical.

We elect our time, usually fourteen to twenty-one days after the operation, and open the abdomen through the mid-line.

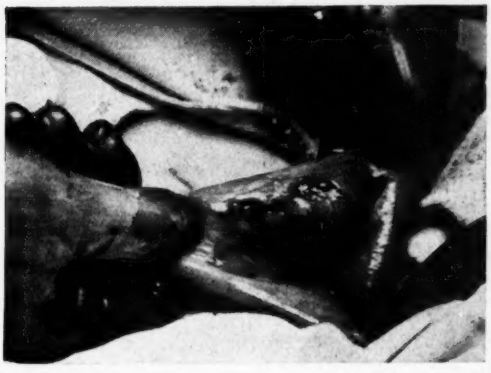


1. On opening the abdomen through the mid-line, many fixed and partially obstructed loops of small bowel were met. Here is one loop of angulation stuck low in the pelvis and already freed enough for photographic demonstration.



3. As continued dissection freed more loops of gut, more areas of angulation, fixation, and abscess were met until all were liberated completely. Here is an area of gut rather intricately fixed in a snarl.

We are aware then of how advanced the pathologic state may be and yet be symptom free under pituitrin. (See illustration). Indescribable tangles are dissected and the enclosed abscess areas wiped off and cleansed widely with bichloride-moistened gauze. The properly freed intestine comes freely up out of the

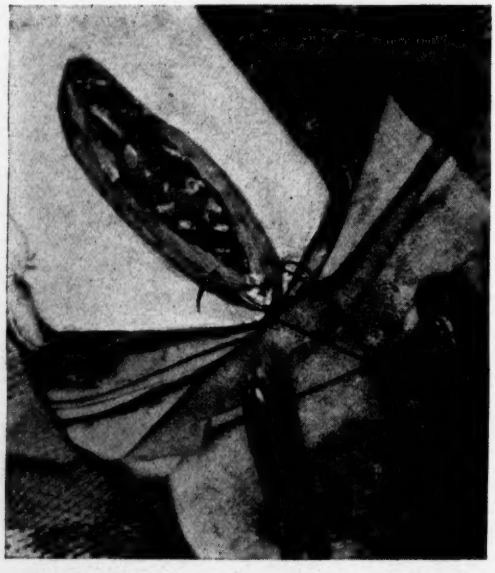


2. When completely freed and delivered from the abdomen, the loss of peritoneal surface of the bowel was visible. This loss was due to small abscess at this point.

4. As it is freed, the loss of peritoneal substance becomes more strikingly evident. Plaques of butter-like peritoneal exudate were frequently seen and removed. Free pus was aspirated from each abscess area.

5. Marked mesenteric adenitis was present. The degree of distention from partial obstruction was surprising, considered in the light of the symptomatic history. Pituitrin used as described has accounted almost universally in these cases for the prevention of visible distention or rather symptoms of obstruction.

6. This shows one of the areas of multiple-wing plication, finished and ready for restoration into the abdomen. Sewed in an arbitrarily-chosen manner, any degree of future obstruction is prevented.



7. The routine closure as described involving suturing of the rectus muscle bundles together across the mid-line and closure of their sheaths below and above.

8. This is the general appearance of the patient five days after plication. The drain into the bottom of the pelvis through a stab wound signifies the presence of a rather large accumulation of pus found behind the sigmoid at the time of plication. The absence of distention is usual, but noteworthy in the light of the extensive damage found. Convalescence continued as desired and as mentioned.

This patient was operated in April, 1941, was drafted into military service in 1941, has gained some forty pounds, and is free of any symptoms referable to his G. I. tract.

abdominal cavity and all involved areas must be liberated to this extent. Raw areas abound. Many areas of intestinal and mesenteric peritoneum have disappeared leaving granulomatous bases that ooze freely. If allowed to drop back these intestinal loops will adhere quickly and again produce obstruction sooner or later. Where peritoneum is absent adhesions cannot be prevented by any means. Much work has been done on this point and that from 1350 to 1942 has been admirably summarized by Boys.[1]

For many centuries, then, we have aimed at treating peritonitis by preventing adhesions. Failure has attended all attempts. This surely points the way to the falsity of the logic back of this long-continued endeavor. Let us accept the proven fact that adhesions cannot be prevented and will form under the pathologic circumstances we know so well. Discarding vain attempts, we may attain success by putting to use that which we know will occur. Where adhesions cannot be prevented they can be made to form in an arbitrary manner of the surgeon's choice. This manner and method can assure him of his desired result. The writer[2] developed the operation of plication, and its use as described and pictured here, in the early 1920's, and has been secure in his conviction as to its proper place ever since.

Dissection of the intestine as mentioned re-establishes the intestinal current. Plication[3, 4] assures the surgeon that it will remain free without return of obstruction. This was true in our series of cases over a period of twenty years and therefore probably for life. No case, even the earliest, has had to be reoperated for late obstruction; this is in accordance with logic back of the plan. By means of folding the loops during plication the best way of covering raw surfaces becomes obvious in each case, and the affected loops are sutured as desired. The average abdominal surgeon should be experienced enough to judge the first time he tries it. For each fold the suture begins at the root of the mesentery and continues along the intestine, becoming an L-shaped run. Resection is not needed, as both sides of a completely raw bit of intestine may be encompassed by an additional wing or fold of plicated bowel as illustrated. It has been noted that angulation is produced by the gut sticking to the mesentery, usually of some remote area. Since in plication the mesentery is sutured in wing folds there can be no such later wandering of the gut nor any raw mesenteric area for it to meet.

Constrictions result from bands or continuing inflammation. Both are satisfactorily eliminated by plication, since none have developed in any case in all these years. The postoperative treatment after plication is of interest. No case of ileus has been seen. (We wonder if most cases of 'ileus' might not be mesenteric abscesses undiscovered?) The apparently advanced degree of intestinal trauma and manipulation produces little shock or disturbance. Note here the absence of gauze pack or mechanical retractors. Pituitrin is continued two or three days after plication though the patient is put on increased diet immediately. When abscesses have been found involving parietal peritoneum, at this second operation drains into the bottom of the pelvis are used. Distention has been conspicuously absent during recovery.

The convalescence is usually similar to that after clean elective surgery of not very great extent. The postoperative aim, therefore, is obviously to feed for strength and bring the physical activity to a high level early. In this connection we adopted in the beginning the practice of severing the midline septum of the recti and suturing the muscle of one side

to that of the other, not giving much dependence on the very slow union of the fascial sheaths. This gives early, more certain, union, and permits earlier return to activity. Here sulfa drugs injected into the abdominal wall are a good prophylaxis at closure.

In chronic peritonitis, or healed acute peritonitis, whether traumatic, infectious, or otherwise, all stages have been passed through except the resultant mild partial obstructions which usually are not progressing toward complete obstruction very rapidly. Bands of adhesions, angulations, fixations, all act to produce symptoms. These teach the patient to restrict his diet more and more in order to live in some degree of comfort. Constipation is usually obstinate. Treatment of these cases begins with the elective operation of liberation of all of the intestinal abnormalities. Here annular constrictions may necessitate wing or by-passing enterostomies. The intestine is not acutely inflamed and thus is correspondingly easier handled. Surgical liberation of adhered areas may result in much raw surface. This was caused by the initial peritonitis and is of no concern, since plication affords a means of satisfactory compensation. Resection of the involved areas is more serious than plication, too extensive, and gives no better end result as time and our experience have shown.

We have had in our twenty years experience six cases of the most striking kind resulting from universal peritonitis, all from causes other than appendicitis, in which plication of loops was continuous from cecum to duodenum. This extreme degree if needed is warranted since no other method of attacking the problem is in existence today and since today each of the six cases is alive, well, and able to eat as appetite directs. They are symptom-free, though plicated from end to beginning.

Some hundreds of cases of lesser degree have been plicated over the years and their experiences carefully watched. The common experience is that now in place of obstinate constipation there is a marked sensitivity to all cathartic drugs and very infrequent use of them. We believe this to be an instructive observation. In chronic peritonitis then, plication offers the means of covering all raw areas but that of the anti-mesenteric surface. This is minimal and can be covered by omentum in a single plane or ignored where there is no omentum as in the young or debilitated. Mesenteric raw area is covered, as before, in acute cases. This in both cases closes off possible pockets where a loop might stick.

Once again the intestinal current is re-established, free and unimpeded. The hydrodynamics of the intestinal activity act to lessen the degree of chosen fixation so that the worst disturbance to the patient should be immediately postoperative. This has been a supposition since there is an immediate apparent restoration to normal, and not a disturbance in our experience. Again, the surgeon is placed in the desirable position of being in accurate control of his end result.

SUMMARY

The author has studied the efforts aimed at the elimination of adhesions and has pointed out a different rationale. Its uses and applications are described in their proper places with regard to acute peritonitis and to the treatment of the end result of late peritonitis. This changed attitude toward early peritonitis has proved effective over the years.

The author believes that a clear comprehension of the morbid processes involved in peritonitis lead to an aggressive manner of treatment of them, and has devised a successful therapeutic

method, involving plication of the intestine, for both acute and chronic peritonitis. Mortality figures are those of clean surgery in acute disseminating peritonitis, and are less than five per cent at present writing. Late morbidity—including obstruction, constipation, "gas"—has been zero. The author believes that in old chronic cases of adhesions, in cases of all forms of old peritonitis, as well as in cases of acute severe fulminating peritonitis, the surgeon has direct control over his result; or as much control as is humanly possible when man's variable anatomy and pathologic physiology are involved.

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SUMARIO

Lugar del Pliegue en el Tratamiento de Peritonitis

El autor ha estudiado los esfuerzos dirijídos a la eliminación de adherencias y ha mostrado distintos razonamientos. Sus usos y aplicaciones son descritas en sus propios lugares en relación con peritonitis agudas y a los tratamientos de los resultados finales en peritonitis tardias. Este cambio en la actitud hacia las peritonitis tempranas ha probado ser efectivo a traves de años.

El autor cree que una comprehensión clara de los procesos mórbidos envueltos en peritonitis nos lleva a una manera agresiva de sus tratamientos, y ha ideado un método de tratamiento con resultados favorables, envolviendo plegamiento del intestino, para ambas peritonitis agudas y crónicas. Las figuras de mortalidad son las mismas de la cirugía limpia que en peritonitis agudas diseminadas, y son menos de diez por ciento al tiempo presente. Morbilidad tardia—incluyendo obstrucción, constipación, "gas"—han sido cero. El autor cree que en casos crónicos viejos de adherencias, en casos de forma vieja de peritonitis, tanto como en casos de peritonitis agudas fulminantes, el cirujáno tiene control directo sobre sus resultados; o tanto control como es humanamente posible cuando variaciones anatómicas y fisiopatológicas estan envueltas.

RÉSUMÉ

L'auteur a étudié les efforts ayant en vue l'élimination des adhérences et nous indique une procédure différente. L'emploi et les applications de cette méthode sont discutés par rapport à la péritonite aiguë et aussi par rapport au traitement des séquelles de la péritonite tardive. Ce traitement lui paraît efficace.

Cette méthode demande la plication de l'intestin et s'applique à la péritonite aiguë et à la péritonite chronique. Sa mortalité est moins de cinq pour cent dans les cas de péritonite aiguë diffuse. La morbidité tardive, obstruction, constipation, ballonnement, n' a pas liéu. L'auteur emet l'opínion que dans les vieux cas d'adhérences et dans les cas de péritonites chroniques, ainsi que dans les cas de péritonites suraiguës le chirurgien a le contrôl direct de ses résultats on plutôt autant de contrôl que permettent l'anatomie et la physiologie pathologique variables de l'homme.

Tetania de la Pared Abdominal, de Origen Paratiroideo Simulando Sindromes Agudos Quirurgicos (Tetany of the Abdominal Wall of Parathyroid Origin)

FERNANDO M. BUSTOS
BUENOS AIRES, ARGENTINA

SUMMARY

Three case histories in which hypertonicity of the abdominal muscles simulated indications for immediate surgery are given. These hypertonicities seem to be of parathyroid origin, and should be kept in mind in making a differential diagnosis when acute abdominal surgery is contemplated.

EN EL espacio de los tres últimos años he observado tres enfermos que presentaban un estado tal de la pared abdominal que simulaban muy bien los cuadros clínicos de la úlcera perforada y el de la apendicitis aguda y en los cuales se comprobó que dependían de hipertonías musculares de origen paratiroideo.

Considero de interés la publicación resumida de estas tres historias clínicas con el objeto de llamar la atención sobre este aspecto del diagnóstico diferencial.

1er caso. Hombre de 25 años, que comienza su enfermedad hace 6 horas con dolores en el abdomen y que fué internado de urgencia con el diagnóstico de úlcera de estómago perforada. El dolor espontáneo es muy agudo.

Abdomen en tabla, simétrico, inmóvil, con los relieves de los rectos bien dibujados.

A la palpación: consistencia de tabla, músculos contracturados. Las presiones determinan muy ligero dolor y no aumentan la contractura; es decir, no hay defensa muscular.

Percusión: nada de anormal.

(Llama la atención que con tanto dolor espontáneo y con tanta rigidez en la pared abdominal, no tenga un dolor más importante a la presión y que no se provoque en ninguna zona el fenémeno de la defensa muscular.) Hechas estas comprobaciones se continúa con el examen general:

En la musculatura de los miembros superiores, inferiores y en las goteras vertebrales existe hipertonía, pero en ninguna parte tiene la intensidad que se observa en la pared abdominal.

Reflejos tendinosos, muy exgerados.

Signos de Trousseau y de Chvostek, positivos.

Glándula tiroides: pequeña, dura, indolora.

Temperatura: 37.3. Pulso: 120.

(Se extrae sangre para practicar dosajes de calcemia y otras investigaciones.) Se inyectan, por vía endovenosa, 10 cc. de una solución de cloruro de calcio al 10%. El dolor espontaneo se fué calmando mientras se estaba efectuando la inyección; la contractura del abdomen disminuyó grandemente, de inmediato, pero sin desaparecer del todo. Durante los días subsiguientes, la hipertonía persistía, aunque de menor grado, pero el dolor no volvió a aparecer. Se repitieron las inyecciones de cloruro de calcio, cuya acción fué siempre muy rápida; pero se atenuaba a las cuatro o seis horas. Se agregaron al tratamiento inyecciones de hormona paratiroidea, por vía endovenosa, cuya acción fué más enérgica y más duradera.

Con esta medicación el enfermo notó gran facilidad en los movimientos de flexión y extensión y recién confiesa que en los días anteriores los había notado muy torpes. La movilidad abdominal, a las tres horas de la inyección de Parathormone, es completa durante los esfuerzos y durante la respiración profunda. Se continúa con la misma medicación durante los días sucesivos. La temperatura llegó al segundo día a 38° y el pulso a 140 por minuto. Las dos curvas descendieron a la normal al cuarto día.

En los antecedentes personales no hay ningún dato que merezca especial mención.

La calcemia, antes de comenzar la primera inyección de cloruro de calcio era de 8 miligramos por cien, al cuarto día 10 miligramos, y al séptimo día 11 miligramos por cien (Método de Kramer y Tisdall). Uremia: 0.28 por mil; glicemia 0.90 por mil.

Reacciones de Wassermann y Kahn, fuertemente positivas.

La hipertonía muscular, la hiperreflexia y los signos de Trousseau y de Chvostek, permiten encuadrar el caso como un sindrome de tetania. El predominio de la hipertonía a nivel de la musculatura abdominal le dá a esta observación un cariz especial puesto que se presentó como un cuadro de cirugía abdominal de urgencia. La cifra de la calcemia, ligeramente descendida durante el primer día confirma la interpretación. El dolor espontáneo, tiene dentro del cuadro su explicación: es sabido que los estados espasmofílicos—tetanias—pueden ofrecer también manifestaciones viscerales, como dolores y espasmos, que a veces han sido registrados hasta radiológicamente. En cuanto a la hipertermia, que llegó a 38° recordemos que en las tetanias es el resultado de la autointoxicación derivada del régimen muscular elevado dependiente

del estado espasmódico. La taquicardia se explica de la misma manera.

Investigando la etiología posible del trastorno que ofreció este enfermo nos encontramos con reacciones de Wassermann y Kahn fuertemente positivas y en el aparato tiroideo una atrofia y un aumento de consistencia. (El límite de esta atrofia no es posible fijarlo, pero no es ilógico pensar que pueda alcanzar también a las paratiroides.)

Se le aconsejó tratamiento hormonal y antiluético.

2do caso. Hombre de 60 años que ingresa al servicio de la Cátedra del Profesor Marotta, con un gran tumor del cuello constituido por un infarto ganglionar neoplasico determinado por un epitelioma faringeo. El tumor ganglionar alcanza, por su borde anterior, hasta la vecindad del aparato tiroideo y se confunde con él.

En el examen general se comprueba una contractura permanente de los músculos anchos y rectos del abdomen, de igual intensidad en ambos lados. No hay dolor espontáneo ni provocado. Percusión: normal.

Hay hipertonía en la mayor parte de la musculatura de los miembros.

Hiperreflexia general exquisita.

El examen completo no revela ningún proceso en el abdomen fuera de la contractura de la pared, la que se conservó durante 15 días.

El enfermo no tenía ningún antecedente patológico gastro intestinal.

Calcemia: variable entre 8 y 9 milígramos por cien.

Sin confirmarlo, se puede sospechar en este caso la existencia de una lesión destructiva del tejido paratiroideo por la neoplasia ganglionar.

El gran tumor del cuello, y la grave lesión faringea restaban importancia al cuadro abdominal; pero es bueno tenerlo presente, desde el punto de vista del diagnóstico diferencial por las aplicaciones que pueda tener en Cirugía de urgencia.

3er caso. Enferma de 17 años que ingresa a la Sala 7 del Hospital Ramos Mejía (Cátedra del Prof. Marotta) con el diagnóstico de apendicitis sub aguda para operarse.

Desde las últimas semanas tenía dolores en la fosa ilíaca derecha que se acentuaron el día de la internación. No tienen ninguna otra molestia gastrointestinal.

Abdomen plano, simétrico, mostrando los relieves de los musculos rectos en forma muy destacada. La musculatura de la pared tiene una dureza especial que dificulta la palpación profunda. Dolor ligero en la zona de Mac Burney; en el resto de la pared, a pesar de la contractura, no se despierta ni dolor ni defensa muscular.

Es un estado de hipertonía evidente.

Existe también hipertonía en la musculatura de los miembros y en el tronco. Se provocan contracturas musculares tónicas y fibrilares mediante la percusión.

Reflejos patelares, muy exagerados.

Signo de Chvostek, positivo.

Después de este examen se le interroga prolijamente y la enferma refiere que desde hace algunos meses nota torpeza en los movimientos de los miembros.

Se le inyectan, por vía endovenosa, 10 c.c. de solución de cloruro de calcio al 10%.

A los 15 minutos se han relajado casi todos los músculos; pero los de la pared abdominal conservan rastros de hipertonía. La enferma dice que sus brazos y articulaciones están más "flojos" y "dóciles."

Al otro día se renueva el cuadro. Se le repiten las inyecciones de cloruro de calcio.

La cifra de la calcemia varía entre 9 y 11 miligramos por mil. La fosforemia se ha mantenido alrededor de 3.10.

Después de 15 días de tratamiento, durante los cuales tiene remisiones y exacerbaciones de los síntomas en relación con la medicación de calcio y con los descansos, se le extirpa el apéndice, que presentaba solamente lesiones de inflamación crónica.

Durante el post operatorio se suspendió el tratamiento de cloruro de calcio. A los seis días, el estado hipertónico de la pared reapareció, sin dolor y sin defensa muscular.

Se vuelve a tratar con cloruro de calcio ye se obtuvieron las mismas remisiones.

Se le prescribió un tratamiento de cloruro de calcio, Parathormone y un régimen dietético adecuado.

La hipertonía y contracturas musculares, la hiperreflexia, la presencia de los signos de Chvostek y Trousseau, las remisiones obtenidas con calcio y Parathormone nos autorizan a clasificar nuestros casos como estados de tetania de origen hipoparatiroideo. La explicación patogenética de estos sindromes hay que buscarla en alteraciones del complejo "simpático-hormonal" que es el regulador del metabolismo químico del músculo, y por ende, factores del tonus muscular.

Aunque estos casos son bien raros creo de interés llamar la atención sobre la existencia de estos sindromes, que en determinadas situaciones, como la del enfermo sitado en primer término, pueden prestarse a graves errores de diagnóstico.

SUMARIO

Se trata de tres historias clínicas resumidas correspondientes a enfermos que presentaron una acentuada hipertonía de la musculatura de la pared abdominal que simulaban sindromes quirúrgicos agudos del abdomen.

El estudio clínico y de laboratorio permitió sospechar que esas hipertonías dependían de trastornos de origen paratiroideo.

El autor advierte sobre la conveniencia de tener en cuenta estos trastornos al hacer los diagnósticos diferenciales en cirugía abdominal de urgencia.

RÉSUMÉ

Trois cas sont décrits dans lesquels l'hypertoniciteé des muscles abdominaux simulèrent les indications pour une intervention chirurgicale immédiate. Ces hypertonicités sont d'origine parathyroide, et doivent être excluses avant de procèder à aucune opération abdominale d'urgence.

NEWS ITEMS

Dr. Fred H. Albee of New York, N. Y., will leave Miami, Florida, via the Pan American Airways on August 10th, on a good-will trip to several countries in South America, including Brazil, Argentine, Chile, Peru and Panama.

By invitation from the University of Buenos Aires, Dr. Albee will dedicate the Professor Fred H. Albee Operating-room of the new Medical College of the University of Buenos Aires.

He will address, by invitation, the Brazilian National Orthopaedic Association and will lecture at the University of Chile, of which Faculty he is an Honorary Member.

The Rehabilitation Commission of New Jersey, of which Dr. Albee has been the Chairman ever since his discharge from the Army at the close of the First World War twenty-four years ago, has delegated him to report the work done in rehabilitation by the Commission to the various contries which he visits in South America.

Dr. Albee will leave August 10. While in Rio de Janeiro he will address the Brazilian Chapter of the International College of Surgeons and the Brazilian National Orthopaedic Association. The invitation for this address was brought to Dr. Albee by Dr. Luthero Vargas, the son of President Vargas of Brazil. While in Buenos Aires he will give a number of addresses and also speak at Rosario, Cordoba. His lectures will be illustrated by colored motion pictures. While in Peru, he will deliver two lectures, one at the Peruvian Academy of Surgery and the other to the Peruvian Chapter of the International College of Surgeons. While in Panama, he will be the guest of the President of the Republic and, if possible, address the Panamanian Chapter of the International College of Surgeons.

The following officers have been elected for the **Cuban Society of Otolaryngology:** Dr. Roque Sánchez Quirós, President; Dr. Reinaldo de Villiers, Vice-President; Dr. Alfredo M. Petit, Secretary; Dr. Arturo Ojeda, Treasurer; and Drs. Eduardo R. Arellano and José Gros, Delegates.

Dr. James W. Watts, associate professor of neuro-surgery at the George Washington University School of Medicine, was presented on May 4 with the John Horsley Memorial Prize in medicine of $600 for his paper on "Psychosurgery," written in association with **Dr. Walter Freeman,** of Washington.

The Friedenwald Medal of the American Gastro-Enterological Association was presented on June 8 during the Atlantic City meeting to **Dr. Max Einhorn,** since 1896 professor of medicine at the New York Post-Graduate Medical School, Columbia University, for "outstanding achievements in the field of gastroenterology and for the invention and putting into practical use of many instruments of precision used in the study of digestive diseases."

Dr. Louis B. Flexner, member of the Department of Embryology of the Carnegie Institution of Washington, has been given leave of absence from the laboratory in Baltimore to serve as aide to the Committee on Aviation Medicine of the National Research Council. **Dr. S. R. M. Reynolds** is also on leave of absence, having been commissioned First Lieutenant in the Army Air Force and attached to the School of Aviation Medicine at Randolph Field, Texas.

(Continued on page 333)

Massive Resection of the Small Intestine*

EXCISION OF TWELVE FEET SIX INCHES WITH RECOVERY

JULIEN C. PATE, M.D., F.I.C.S.
TAMPA, FLORIDA

RESECTION of a large amount of the small intestine is seldom an elective procedure, for the alternative of allowing the patient to die or of resorting to an extreme measure in an effort to save his life by resection is the alternative that confronts the surgeon. Extensive resection with favorable results may occur less rarely than is generally believed.

As early as 1880 Koeberle[1] reported perhaps the first massive resection of the small intestine; the patient recovered following the removal of 205 cm. of this portion of the bowel. Cases were reported from time to time thereafter, and a number of authors reported studies of collected cases that indicated a fairly high percentage of recovery and warranted the expectation of good functional results. A study by Dorow,[1] made in 1932, brought the number of cases recorded to 97, and in this series he reported a mortality rate of 18.6 percent.

In 1935 Haymond[1] analyzed 257 collected cases of massive resection of the small intestine in patients whose ages ranged from 8 to 76 years and in whom the mortality was considerably higher above the age of 30 years. The percentage of good results in this series of cases was relatively the same for both sexes, but poor results occurred more frequently among women. The common causes were volvulus, strangulated hernia, mesenteric thrombosis, diseases of the mesentery, diseases of the pelvic organs of women, abdominal injuries including war wounds, tuberculosis of the small intestine, and such miscellaneous causes as adhesions and bands, invagination of a polyp, intussusception, gangrenous appendix and gangrenous ileum.

The length of the small intestine varies widely in different persons. The consensus among a majority of investigators is that it is somewhat less in women than in men. Haymond[1] reported that in 1,161 cases the average length was 21 feet 6 inches. The length varies from 18 to 26 feet, the average being 19 feet, according to Sarnoff.[2] This author concluded that one half of the small intestine may be removed without endangering life, but that the removal of 80 per cent proves fatal to animal and man alike. He mentioned 5 cases in which the lengths of the portions resected successfully were 540, 534, 520, 475 and 400 cm., thus ranging from 13 to 18 feet. While the patients in these cases survived the operation, nearly all died shortly afterward. Haymond[1] concluded: "Discounting the dangers of the operation itself and its concomitant possible complications, a patient can withstand a massive resection of 33 percent of the length of the small intestine and expect the digestive tract to return to normal function; 50 percent removal constitutes the upper limit of safety in extensive enterectomy; and resections above 50 percent must necessarily obtain poorer results even though an exceptional case may be better than predicted." The removal of lengths measuring 200 cm. or

*Read before the Hillsborough County Medical Society, Florida, on April 7, 1942.

more has long been regarded as extensive resection.

Diarrhea is the most frequent and also the most disturbing postoperative complication, both clinically and experimentally.[1] It must of necessity be controlled by dietary management as it cannot be controlled by drugs. Haymond[1] observed that in his series of 257 cases of extensive enterectomy the mortality rate of 33.5 percent does not represent the true operative mortality of this spectacular procedure because the tendency is to report only the successful cases. Good results after survival of the operation depend, in his opinion, on the condition and length of the small intestine remaining, on the disease condition that necessitated the massive resection, and on the feeding of a diet poor in fat, adequate in protein and rich in easily assimilable carbohydrates.

In 1940 Todd, Dittebrandt, Montague and West[3] reported a summary of three periods of metabolic study carried out since 1935 on a man with all but 3 feet of the small intestine removed surgically. They observed that carbohydrates were utilized normally in all three periods. The proteins were not so well absorbed; the percentages for the three periods were 76, 75 and 69. Because of its direct effect on the absorption of calcium, the metabolism of fats was of particular interest. It was learned that more calcium was lost when larger amounts of fats, largely in the form of fatty acids, were excreted in the feces. The excretion of phosphorus tended to parallel the excretion of calcium. In this case tetany was obviated only by a diet very high in calcium and vitamin D (viosterol); the condition was controlled more easily with an intake high in carbohydrates and low in fats.

The case presented is of interest in that there were no immediate premonitory indications of the sudden acute attack characterized only by agonizing pain and in that recovery of the patient was rapid, without incident and accompanied by prompt restoration of normal function following the removal of 12 feet 6 inches of the small intestine.

REPORT OF CASE

W. R., a white farmer aged 36, married, was admitted to the Tampa Municipal Hospital on Nov. 6, 1941, complaining of severe epigastric pain. He had been suffering from a gastric disturbance for approximately fifteen years. In October 1939 he had been operated on in South Carolina for a perforating peptic ulcer. Since that time he had suffered from dyspepsia, which was relieved only after antiacid medication.

Having retired the night before feeling normal in every respect, the patient was awakened at 4 A. M. on November 6 by a knifelike pain in the upper portion of the epigastrium beneath the tip of the ensiform cartilage. En route to an outside toilet he experienced increasingly severe pain and fell unconscious to the ground. His wife found him in a convulsive seizure and with aid removed him to his bed. On regaining consciousness thirty minutes later, he requested a glass of milk, which had often relieved the dyspepsia previously. After drinking a small amount of the milk he again experienced increasingly severe pain and vomited for an hour with the pain unrelieved.

When admitted to the hospital at 7:55 A. M., the patient was suffering agonizing cramplike pain in the epigastric region. The temperature was 96.8° F., the pulse rate was 54, and the respiratory rate was 16. The blood pressure was 126 systolic and 88 diastolic. Physical examination revealed a well developed man with pain as the one outstanding indication of acute illness. Peristaltic sounds could be heard. A tentative diagnosis of perforating peptic ulcer was made. He was given 1/6 grain of morphine and 1/150 grain of atropine at 8:35 A. M., and was prepared for surgery. Upon arrival in the operating room, he was perfectly comfortable and had no complaint whatsoever; the abdomen was flat and soft, and the pulse was strong. It was concluded that some gastric disturbance was responsible for the acute pain, and he was accordingly returned to his room for observation. Roentgen examination of the abdomen for free air and fluid levels was then made, but gave negative results.

At 3 P. M. the patient again experienced severe epigastric pain. At this time the temperature was 97.8° F.; the pulse rate was 64, and the respiratory rate was 22. He was given 1/6 grain of morphine. He slept until aroused at 6:30 P. M., at which time he was in no pain. Some tympanites below the umbilicus was now noted for the first time, and only an occasional tinkling was audible upon auscultation of the abdomen.

The results of urinalysis were essentially negative. On examination of the blood at 10 A. M. the hemoglobin estimation was 58 per cent; the count was erythrocytes 3,400,000, leukocytes 9,800, polymorphonuclears 88 and lymphocytes 12. The nuclear index determination was 8, and the color index determination was 0.9. At 7 P. M. the count was erythrocytes 4,100,000, leukocytes 25,400, polymorphonuclears 93 and lymphocytes 7. The hemoglobin estimation was 78; the nuclear index determination was 5, and the color index determination was 0.9. It

was apparent that a necrotic process was present, but there were no clinical symptoms to indicate its location. The Kahn test gave negative results.

At 7 P. M. the patient suddenly began to show signs of shock and was ordered prepared for surgery. At 8:30 P. M. a soap-suds enema yielded good results. When he was sent to the operating room at 9:30 P. M., his condition was poor. The blood pressure was 80 systolic and 60 diastolic, and the respiratory rate was 20.

At operation, an upper right rectus incision was made. The peritoneal cavity contained about 100 cc. of serosanguineous fluid. A large mass of small intestine, dark black in color, was encountered, and the mesentery supplying this strangulated portion of intestine was likewise black and was pulseless, its appearance resembling that observed in mesenteric thrombosis. There was a large rent in the mesentery, which had contracted, strangulating 12 feet 6 inches (375 cm.) of the small bowel. The strangulated section was composed both of jejunum and ileum. The necrotic portion of the bowel was resected, and after excision only 12 inches of the jejunum remained. An end to end anastomosis was made of the remaining bowel, and the mesenteric sheath was approximated with black silk. Eight grams of sulfanilamide was placed in the abdomen, and a cigaret drain was instituted. The infusion of 2,000 cc. of a 5 per cent solution of dextrose in normal saline was given as a continuous drip during the operation. Nitrous oxide combined with oxygen and ether was the anesthetic used.

The operation was concluded at 11:50 P. M. The condition of the patient was fair. The blood pressure was 90 systolic and 35 diastolic. The pulse rate was 100, and the respiratory rate was 18.

The postoperative diagnosis of strangulation of a large portion of the small intestine with passive congestion and necrosis was confirmed by the pathologic diagnosis. The report of Dr. H. R. Mills, pathologist, follows: "The specimen from the above patient consists of about 375 cm. (12 feet 6 inches) of small intestine which shows marked passsive congestion with the exception of about 15 cm. of healthy tissue at each end of the specimen. Opinion: passive congestion and necrosis of small intestine."

One hour after the operation the patient began to show evidence of shock. The blood pressure was 88 systolic and 58 diastolic; the pulse rate was 120, and the respiratory rate was 22. Seven and one-half grains of caffeine sodiobenzoate was administered. By 2:30 A. M. on November 7 he had fully reacted, and Wangensteen suction was begun. Infusion of 1,000 cc. of a 5 per cent solution of dextrose in normal saline was carried out, and thereafter this treatment was continued every eight hours for five days. At 4 A. M. the patient received 500 cc. of citrated blood by indirect method. In like manner he received 250 cc. on the second postoperative day, 500 cc. on the third postoperative day and 250 cc. on the fifth postoperative day.

On November 8, the first postoperative day, the blood pressure ranged from 88 to 124 systolic and 64 to 84 diastolic; the temperature was 101° F. At 9 P. M. the patient vomited a small amount of thick mucous material. One hour later he was given 7½ grains of caffeine sodiobenzoate subcutaneously, and the dose was repeated every four hours during the night. When necessary, ¼ grain of morphine was given for pain.

On November 10, the third postoperative day, the temperature was 102.8° F., the greatest elevation recorded; the pulse rate was 106, and the respiratory rate was 24. The drain was removed from the wound, and the patient was given 5 gm. of sodium sulfathiazole. On the following day the Wangensteen suction was discontinued. The patient was allowed a full diet of liquids without milk, which was added two days later. The first bowel movement occurred on this day, and four days later regular bowel movements were established. On November 13, the sixth postoperative day, the temperature was normal for the first time since the onset of the attack. The patient was placed on a soft diet the next day and on a light diet three days later.

The wound healed by first intention, and on November 21, the fourteenth postoperative day, the patient was discharged from the hospital in good condition. During the entire period of hospitalization following the operation his only complaint was slight weakness.

On December 20, four weeks after discharge from the hospital, the patient visited my office. He related that he was having no discomfort, had had no dyspepsia since the operation and was having a daily bowel movement. There had been a gain in weight of 11 pounds. When he again reported to my office on April 4, 1942, he had gained 20 pounds since the operation five months previously. He stated that he felt better than for fifteen years and had normal elimination daily; his appetite was very good and he ate anything he pleased from cabbage and pork chops to sweet potato pie. He was engaged in farm work, plowing and digging fence posts without experiencing inconvenience.

COMMENTS

This case is noteworthy in that resection of 12 feet, 6 inches (375 cm.) of the small intestine, more than half its entire length, was a matter of dire necessity rather than of choice.

The patient presented no symptoms or signs typical of a condition requiring such extensive resection, namely, diarrhea, loss of weight, sensitivity of the intestine, anemia, inability to digest fats, or tetany.

Anastomosis was evidently satisfactory; otherwise a fecal fistula would have developed.

There was no evidence of obstruction postoperatively.

Owing to the use of Wangensteen suction, little absorption took place in the gastrointestinal tract for a period of five days after the operation, during which time an infusion of 1,000 cc. of a 5 percent solution of dextrose in normal saline was carried out every eight hours.

Nutrition was well maintained as evidenced by the patient's gain in weight.

Obviously, this is only a preliminary report, and the ultimate outcome over a period of years still remains *sub judice.*

SUMMARY

The author reports an atypical case of massive resection in which more than half of the small intestine was removed. The patient was soon able to return to heavy farm labor. Six months after the operation he was in excellent health and able to eat every type of food. The literature on the subject is referred to.

SUMARIO

El autor reporta un caso de resección masiva en el cual mas de la mitad del intestino delgado fué extirpado. El paciente fue capaz de un trabajo duro en una finca de labor. Seis meses despues de la operación el estaba en una salud excelente y era capaz de comer toda clase de alimentos. Se hace referencia a la literatura en esta materia.

RÉSUMÉ

L'auteur rapporte un cas atypique de resection massive de l'intestin. On réséqua plus de la moitié de l'intestin griêle. Peu de temps après, le malade retourna à son travail pénible. Il est cultivateur. Six mois après de l'opération, il se trouve en excellente santé. L'appétit est bon et il mange toutes espèces d'aliments. La littérature du sujet est citée et discutée.

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Renal Neoplasms*

DIAGNOSIS AND TREATMENT

JOHN DUFF, M.D., F.A.C.S.
NEW YORK CITY

TUMORS of the kidney and renal pelvis, except the Wilms tumor, usually are discovered after the fifth decade. The embryonal adenomyosarcoma, or Wilms tumor, develops in childhood during the first four years of life, and it is rarely discovered after the tenth year.

Many competent pathologists have attempted to classify renal tumors, but much confusion still exists as a result of their efforts. Grawitz, in a masterly thesis presented in 1883, postulated that many, if not most, tumor cells of the renal parenchyma were of adrenal original. Later (1892) Birch-Hirschfeld called such tumors "hypernephromata." However, eminent authorities now seem to agree that adenocarcinoma is the most common of all renal tumors and that quite frequently it is erroneously confused with hypernephroma which apparently is not considered to be a tumor of adrenal origin.

No new classification of renal tumors is even considered by your essayist, but from a urologic surgical standpoint it appears fitting to present the problem under five headings:

A. Benign neoplasms of the renal pelvis

B. Malignant neoplasms of the renal pelvis

C. Benign neoplasms of the parenchyma

D. Malignant neoplasms of the parenchyma

E. Wilms tumors

* Presented December 4, 1941, at the meeting of The Hudson Valley Surgical Guild of the International College of Surgeons at St. Francis Hospital, Poughkeepsie, New York.

BENIGN NEOPLASMS OF THE RENAL PELVIS

We should always regard a tumor of the renal pelvis as potentially malignant.

Neoplasms of the renal pelvis, benign or malignant, may be single or multiple, and vary in size from a microscopical grouping of a few cells to enormous growths which fill the entire pelvis and all of the calices. Strange as it may seem, the non-malignant type of papilloma is more prone to extension by implantation than the papillary carcinoma or epithelioma.

Over seventy-five percent of tumors originating in the renal pelvis or calices are papillary epitheliomata but primary tumors are rare. Of 651 cases of renal tumor described by Judd, Israel and Israel, and Hunt, 32 (4.3 percent) primary tumors of the pelvis were reported —less than five percent.

Histologically and pathologically, renal pelvic tumors are very much akin to tumors of the bladder and ureter. The only really important non-malignant tumor of the renal pelvis is the benign papilloma or fibroepithelioma. It rarely appears as a single or individual tumor, but grossly as a rather multiple growth. This type of tumor is pedunculated, terminating in a burst of frondlike villi, or fronds, gracefully waving about in the urine or any other fluid which may be in the bladder. Microscopically, the stalk contains a capillary vessel or vessels surrounded by a varying amount of fibrous tissue. These small capillaries soon further subdivide, umbrella fashion, becoming smaller and smaller.

Each is surrounded by a constantly decreasing concentration of stroma and is covered by transitional epithelial cells morphologically similar to bladder epithelium. The tumor cells are irregular, elongated and cuboidal, but in the deeper layers they are cylindrical. Round cell infiltration, edema, hemorrhage and necrosis are frequently demonstrable.

MALIGNANT NEOPLASMS OF THE RENAL PELVIS

Papillary epithelioma and papillary carcinoma are malignant tumors of the renal pelvis. A papillary epithelioma has a definite tendency to invade the submucosa. Papillary carcinoma consistently invades the connective tissue. Thus it can be easily realized that papillary epithelioma and papillary carcinoma enter the realm of cancer.

No one doubts that alveolar carcinomata and squamous cell carcinomata are malignant growths. They metastasize rapidly and have a fast and fatal finish.

DIAGNOSIS

The diagnosis of the malignant or nonmalignant tumor of the renal pelvis is usually made postoperatively. There is no way at present of obtaining preoperatively a biopsy from a suspected growth in the renal pelvis. However—and this is a point not far fetched—if a tumor of the kidney pelvis is suspected, a careful examination of the urine for tumor cells should be made. It is possible that they may be found.

Pain is not a constant symptom and is present only when there is obstruction to the outflow of urine. Tumor, as such, is demonstrable only when the growth is so enormous, as it rarely is, or because a coincident hydronephrosis or hematonephrosis causes an unnatural swelling. Hematuria is the only more or less constant symptom and it may appear at long intervals. However, it is a most important symptom and should not be disregarded. Retrograde pyelography is of great value. There may be shown a filling defect which suggests tumor, but so many complicating factors enter the picture. Such confusion may be induced by a non-opaque stone, blood-clot or air bubble.

Intravenous urography may be of use if retrograde pyelography is thwarted. Personally, I would rather not depend upon this method for a definite diagnosis, although it should not be dismissed lightly.

A positive preoperative diagnosis of tumor of the kidney pelvis is, more often than not, a good guess.

TREATMENT

When such a confusing picture is presented, an exploratory operation is indicated.

Laboratory and x-ray findings should not supplant considered experience and clinic judgment. Naturally, one might hesitate to recommend nephrectomy when the microscopical examination of a biopsy specimen from a solitary growth of the renal pelvis is reported as a benign papilloma. But as a conservative measure, in spite of the report of a benign growth, nephrectomy, or, better still, nephro-ureterectomy should be performed whenever a tumor of the renal pelvis is demonstrable, provided the other kidney functions adequately. Moreover, a generous section of the bladder surrounding the ureteral orifice should be removed coincidentally. Under such circumstances the chances for cure may not be good, but the anticipation of a longer life expectancy is within the realm of reason. Of course, if a malignant growth is discovered, involving the tissues of the renal pelvis or calices, or both, the kidney and entire ureter including a portion of the bladder must, of necessity, be removed. At present deep

x-ray therapy is of no ultimate value, preoperatively or postoperatively.

BENIGN NEOPLASMS OF THE PARENCHYMA

The benign neoplasms of the renal parenchyma, namely (1) fibroma, (2) fibromyoma, (3) hemangioma, (4) lymphangioma, and (5) adenoma are relatively rare and of no real clinical importance.

An adenoma may attain large proportions and thus become, subjectively or objectively, important; but the diagnosis of a benign neoplasm of the kidney is usually made, postmortem or postoperatively—and then microscopically.

If clinical evidence of a kidney tumor is present, the tumor may safely be presumed to be malignant.

MALIGNANT NEOPLASMS OF THE PARENCHYMA

As previously suggested, there is no place in this presentation for controversy as regards the pathological classification of malignant renal tumors. It would be pleasing to every urologic surgeon to have, once and for all, a definite decision as to whether there is such an entity as a renal tumor of adrenal origin. The fact remains, however, that when a tumor of the kidney is diagnosed preoperatively it must, at present, be presumed to be malignant. Consequently, a plea is hereby made for better methods of early diagnosis of this disease and for more adequate pre- and post-operative treatment once the diagnosis has been established.

In the Journal of Urology, Volume 32, Number 4, October, 1934, I reported that among the industrial policyholders of the Metropolitan Life Insurance Company for the years 1917-1928, inclusive, all forms of cancer caused 125,740 deaths. The number of deaths from cancer of the kidneys and suprarenals was 1332 or 1.1 percent of the total cancer mortality during this twelve-year period. The outstanding item in these mortality statistics for cancer of the kidney was the relatively large number of deaths that occurred among children and young men and women. Of the 1332 deaths from kidney cancer reported in this study, 313 (23.5 percent) were those of persons between the ages of one and twenty-five years. In the age group, forty-five to fifty-four, 244 deaths were reported, and in the group, fifty-five to sixty-four, the total number of deaths was 357.

From the foregoing figures, if from no others, it may be seen that kidney tumors are not common. However, all reports agree that the ultimate mortality of such cases is very high, in spite of treatment—operative or non-operative.

At Morrisania City Hospital during the five year period (1936-1941) we have accepted the diagnosis of cancer of the kidney in thirty cases. Twenty were operated upon and ten were not. At the moment—of the twenty patients operated upon, four are alive—thirteen are dead, and three we were unable to contact. Of the ten patients where the diagnosis of cancer of the kidney was made but the kidney not removed, eight are dead and two could not be traced. This small contribution of cases is presented in all modesty but with a keen realization and appreciation of the factors involved.

Pathology. The most common malignant parenchymal tumors of the kidney are carcinomata. They are of three types:

(a) Clear cell papillary adenocarcinoma

(b) Granular cell papillary adenocarcinoma

(c) Transitional type of combined clear and granular cell papillary adenocarcinoma.

Hypernephromata are encountered less frequently but, strangely enough, they metastasize more readily and effectively than the adenocarcinomata, although they are relatively less malignant. Alveolar adenocarcinoma of the kidney is viciously malignant, but fortunately it is uncommon. Sarcoma of the kidney is rare and always lethal, despite any kind of treatment.

Malignant tumors of the kidney may metastasize by three routes: 1. Blood stream and lymphatics, 2. Transplantation, 3. Extension. It is hard to say which is the most important because if extension of the tumor by either one of the three channels has occurred the result is the same: death. No routine or rule or traverse is followed by renal tumors. Extension of the process by way of the renal vein into the vena cava obviously presents the most rapid and effective mode of extension.

Diagnosis. There is no infallible syndrome by which cancer of the kidney can be diagnosed. Hematuria is the most constant symptom and appears in about sixty percent of cases. Pain in the region of the affected kidney is the next most common complaint. Lastly, a swelling or mass in the region of the dieased kidney is complained of by the patient, or discovered by the examiner. The most conclusive evidence is obtained by cystoscopy, including retrograde pyelography or excretion urography, or, better still, by both. So many variables are possible that, even in the face of apparently conclusive radiographic evidence, a definite preoperative diagnosis should be made hesitantly. The most confusing pyelogram for differential diagnosis is that of polycystic kidney. But, as an offset to this complexity, it is a fact that in the case of polycystic kidney disease, the process is almost always bilateral, and a kidney tumor is usually unilateral. Nevertheless, so many exceptions have intruded, a qualified or tentative radiographic diagnosis of kidney tumor is altogether warranted. It may be that if a pyelogram is presented, the like of which has not been previously encountered, a diagnosis of tumor of the kidney is justified, such justification being based upon the fact that there is no pyelographic constant for tumor and there are clearly defined radiographic criteria for many other afflictions of the kidney. Cystoscopic examination of the patient is basic, because individual kidney function must be determined before nephrectomy is considered. Clinical experience and judgment once more become prerequisite.

Treatment. At present the only hope for patients suffering malignant kidney diseases is surgery. In such cases, when nephrectomy is successfully performed, life may be prolonged but cure is doubtful.

Realizing that the rapid route for extension of the malignancy is by the blood stream (to the vena cava by way of the renal vein), the kidney and its pedicle must be handled gently at the time of operation. All body tissues, especially blood vessels filled with thrombi, resent surgical intrusion. The renal vein is no exception.

Adequate, gentle, exposure of the kidney and its pedicle is fundamentally necessary in all operations for malignancy of the kidney.

The renal vein should be observed and gently palpated. If found to be thrombosed, dissection should be continued, in order to discover the extent of thrombosis. Should the thrombus extend beyond reasonable reach or into the vena cava, no further examination is necessary, and the operative wound should be carefully closed without more ado. However, if a thrombus is reason-

ably limited, the vein should be doubly ligated below the thrombus and divided between the ligatures. From this point, removal of the kidney is routine whether the vessels have been ligated separately or the pedicle tied en masse. However, it is necessary to resect as much of the ureter as possible, including a generous portion of the bladder wall surrounding the ureteral orifice. The perirenal tissues should be removed in toto. Such procedures may seem time-consuming, but when one realizes that renal malignancies metastasize by direct extension and by blood vessels and the lymphatics, the wisdom of these additional dissections is evident.

If metastases have occurred, surgical intervention is useless. However, one patient upon whom we operated and nephrectomized at Morrisania had metastases in the skull, which were discovered preoperatively. He lived for three and a half years following operation.

Nephrectomy may be accomplished by either the lumbar or transperitoneal route. In the case of kidney tumors, the lumbar route is safer, but adequate exposure is necessary. Resection of the twelfth or eleventh ribs, or both, may prove helpful. There is no contraindication to this simple procedure.

Radiation therapy may be of some benefit postoperatively, especially for metastases, but as a preoperative or curative modality it has not been found useful.

WILMS TUMORS

In 1899 Wilms reported fifty-one cases of mixed renal tumors. He concluded that they originated in embryonic life from primitive mesodermal tissue and the nephrotome. Such origin, he felt, accounted for the presence of smooth or striated muscle cells, undifferentiated spindle cells, cartilage bone, and abortive renal elements. Embryonal adenomyosarcoma, or Wilms tumor, rarely occurs after the fourth year of life. It is the most common neoplasm of childhood, and the incidence is about the same in male and female children.

At Morrisania, during the ten year period 1931-1940, three such tumors were found and three deaths were ultimately reported. There was no immediate fatality during or following operation.

There has been much discussion as regards Wilms theory of the origin of these tumors but there is no unanimity of opinion that he was mistaken.

Pathology. An embryonal adenomyosarcoma is highly malignant and is, as a rule, a large solid opaque tumor firmly attached by fibrous union to the true capsule of the kidney. At first the growth is slow, but eventually it enlarges rapidly and may attain a relatively enormous size. The kidney may be destroyed by extension of the tumor into the parenchyma but more often it atrophies as the result of the bulk and pressure of the tumor mass. Extension or metastases occur rather late in the disease, but death from such processes is almost always inevitable, despite surgical or x-ray therapy. Microscopically, there is no constant picture save a conglomeration of various cellular elements of epithelial and connective tissue type.

Symptoms. The first objective, or for that matter subjective, evidence of the tumor is most frequently discovered by the mother who, while bathing the child, notices an abdominal swelling or mass. Pain is a late symptom and it is usually due to pressure on adjacent organs by the cancer. Hematuria is not by any means a constant. As a rule patients afflicted by Wilms tumor suffer but little, even at the time of exodus. Periodic examination of a child by the family

physician will result in the early recognition of this unfortunate development. Happily, Wilms tumors are rare entities, but the mortality is almost 100 percent. The only hope for relief or cure is early recognition and prompt surgical removal of the tumor.

Diagnosis: The early diagnosis of Wilms tumor in children of four years or younger should not be difficult. If the physical examination of a child in this age group demonstrates a palpable abdominal tumor in the kidney region, cystoscopy and pyelography, retrograde and excretion, should be advised and performed without delay. Despite the report of a normal pyelogram, the recognition of such a tumor warrants, and urgently calls for, an exploratory laporotomy. There is no blood picture, no constant x-ray evidence; there is no symptomatic syndrome by which the early diagnosis may be made. Rather does it depend upon the fingers and powers of observation of the examining physician.

Treatment: Primarily and fundamentally, the only hope at present for cure of Wilms tumor is the early discovery and prompt surgical removal of the growth.

The transperitoneal removal of the growth is easier and quicker than the lumbar approach and, as a rule, the ablation is quite easily accomplished. The mechanics of the surgical problem are not difficult. However, ordinarily it is easier to remove a small mass than a large one.

Wilms tumors are customarily radio sensitive and may be markedly shrunken by irradiation. If a youngster has a tremendous tumor, manifestly the disease is far advanced, and the only hope that can be offered by surgery or x-ray therapy is a temporary symptomatic relief. Consequently, there should be no objection to preoperative irradiation if it will, as it does, facilitate operation.

All authentic reports indicate that surgery offers the only hope of cure. Irradiation of the tumor will, in the majority of cases, cause a regression of objective and subjective symptomatology, but, inevitably, there is a recurrence of the temporarily quiescent tumor virulence. Secondary irradiation is futile.

SUMMARY

We cannot escape the conviction that only the early diagnosis of cancer of the kidney gives hope for cure. When such cancers become clinically or radiographically evident, it is too late for successful treatment in the majority of cases. Early diagnosis is imperative. We should hope that in some manner an intravenous injection of a substance will enable us to delinerate radiographically, by nephrogram, early cancers of the kidney.

SUMARIO

Es nuestra convicción que solamente los canceres del riñon con diagnóstico temprano nos dan esperanzas de cura. Cuando tales canceres son clinicamente ó radiologicamente evidentes es muy tarde para un tratamiento efectivo en la mayoria de los casos. Un diagnóstico temprano es imperativo Nosotros debemos tener la esperanza de que una inyección intavenosa de una substancia nos ayude a delinear radiograficamente, por nefrogram, canceres tempranos del riñon.

RÉSUMÉ

Nous avons la ferme conviction que le diagnostic précoce du cancer du rein seul offre un espoir de guérison. Une fois que le cancer du rein est évident cliniquement ou radiographiquement, il est, dans la grande majorité des cas, trop tard

pour permettre l'espoir de guérison. Nous souhaitons que l'parviendra à trouver une substance qui injectée intraveineusement nous donnera des radiogramme permettant le diagnostic précoce du rein.

NEWS ITEMS

According to a report in the *Times*, London, the trustees of the Lady Tata Memorial Fund announce that, on the recommendation of the Scientific Advisory Committee, they have agreed, if circumstances permit, to make the following awards for research in blood diseases, with special reference to leukemia, in the academic year beginning on October 1, 1942: Grants for research expenses —Professor J. Furth (New York); Dr. P. A. Gorer (London); Dr. A. H. T. Robb-Smith (Oxford); Professor L. Doljanski (Jerusalem); part-time personal grant for assistance, Dr. W. Jacobson (Cambridge).

The Milwaukee Society of Clinical Surgery will henceforth be known as the **Wisconsin Academy of Surgery.**

The Honorary Doctor of Laws degree was conferred on **Doctor O. J. Hagen,** of Fargo, North Dakota, by Concordia College at the commencement exercises on June 2.

The degree of doctor *honoris causa* has been conferred by the Catholic University of Chile on **Dr. George W. Corner,** director of the department of embryology of the Carnegie Institute of Washington.

At the University of London the title of professor emeritus of anatomy in the university has been conferred on **Dr. J. E. S. Frazer,** who resigned from the chair of anatomy at St. Mary's Hospital Medical School in March, 1940. The degree of D.Sc. has been conferred on **Dr. R. V. Christie,** professor of medicine at St. Bartholomew's Hospital Medical College.

Dr. John M. T. Finney, professor of surgery emeritus at the Johns Hopkins University, died on May 30 in his seventy-ninth year.

The honorary doctorate of science was conferred on May 24 at the commencement exercises of the University of South Dakota on **Dr. John H. Lawrence,** '26, of the University of California, for "successful therapeutic use of radioactive phosphorus to produce remissions in leukemia in man and for his development of the medical applications of neutrons and artificially radioactive elements"; and on **Lieutenant-Colonel Harry G. Armstrong,** '28, in recognition of his work in the field of aviation medicine.

Dr. René Jules Dubos, member of the Rockefeller Institute for Medical Research, has been appointed George Fabyan professor of comparative pathology and professor of tropical medicine at the Harvard Medical School, Boston. He succeeds Dr. Ernest E. Tyzzer, who becomes professor emeritus.

The University of California conferred at commencement the degree of doctor of laws on **Dr. Langley Porter,** dean emeritus of the School of Medicine at San Francisco.

Dr. Joseph McFarland, emeritus professor of pathology of the University of Pennsylvania School of Medicine, was presented on May 7 with the 1941 Strittmatter Award of the Philadelphia County Medical Society. The award, which consists of a scroll describing the accomplishments of the recipient and a gold medal, was presented by Dr. Jacob Parsons Schaeffer, chairman of the committee on the award. Dr. William Wayne Babcock, professor of surgery at the Temple University School of Medicine, delivered the annual DaCosta Oration. He spoke on "**The Life of a Surgeon.**"

Dr. Ernest Sachs, of St. Louis, was elected president of the American Neurological Association at the meeting of the society held in Chicago on June 4, 5 and 6.

(Continued on page 359)

The Surgical Treatment of Recent Facial Wounds*

MAXWELL MALTZ, M.D., F.I.C.S.
NEW YORK CITY

THE economic and social distress brought about by facial and body disfigurement caused by accidents is incalculable. For example, estimates of the value of time lost while patients are recovering from injuries received in automobile accidents are placed around two and one-half billion dollars annually. In these estimates no allowance is made for the fact that many of the injured, even after physical recovery, may be so seriously disfigured that they cannot return to their old positions nor find new jobs. Neither is allowance made for the economic loss to dependents upon the victims, nor for the resultant psychological damage.

Automobile accidents alone killed 36,000 people in one year in the United States and injured nearly a million. In the eighteen-months' period ending December, 1935, the number of people killed by cars was greater than the number of soldiers who lost their lives with the American Expeditionary Forces in the First World War. In the corresponding enormous group of more than 1,500,000 injured, many remain crippled for life and many are so helplessly mutilated that repair is impossible. Fortunately, a good percentage can be helped back to normal by plastic surgery.

Naturally the important thing is to treat these facial wounds properly. Otherwise scars result which may make the face repulsive. Not only does this become an economic handicap, but a serious social one as well. The afflicted person may become an object of morbid curiosity. His friends are uncomfortable in his presence and torture him by their consciousness of his abnormality. Such an injury, if not properly repaired, in most cases results in a damaging distortion of personality. This is even more evident in a growing child or in a woman who naturally treasures her looks.

The foregoing applies equally well to those injured in an air raid. If proper precautions are taken, very few facial injuries will result. One has but to bear in mind the advice given by the O.C.D. in the event of an air raid. The important points to remember are to keep away from windows if possible, and to cover the face when lying on the ground. The people of England have learned this and comparatively few facial injuries have occurred. Dr. Harold D. Gillies, in charge of plastic reconstructive surgery in England, told the author that with all the terrible air raids to which England was subjected, only five hundred people suffered facial injuries.

Of course there are many types of injuries resulting from explosive bombs. What we shall consider immediately are the superficial facial wounds of the soft parts that may occur in an air raid from flying shrapnel, glass, etc.

If the surgeon hopes to obtain optimum results, facial wounds must be considered as a special problem for the following reasons:

1. The skin of the face plays a rôle different from the skin of other parts of

*Presented at the Symposium on Traumatic Surgery, West Side Hospital and Dispensary, New York City, January, 1942.

Figure 1a

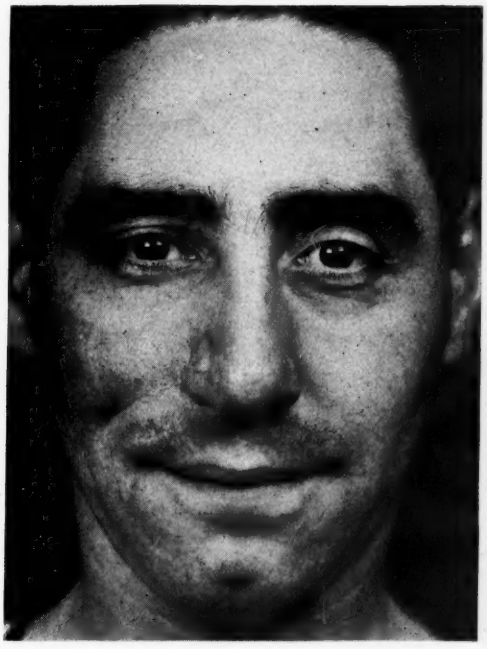


Figure 1 b

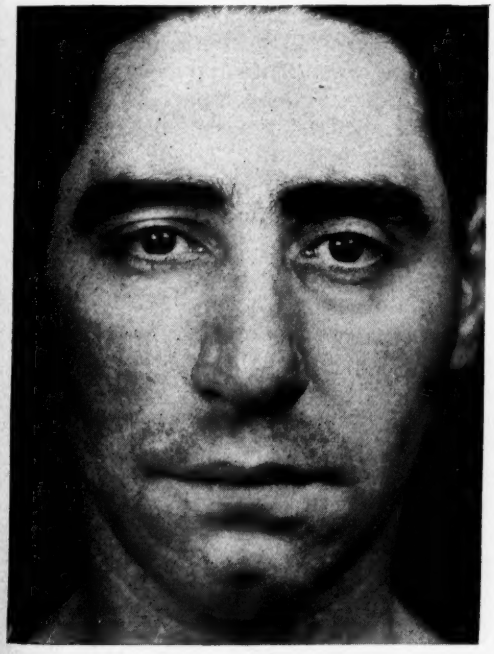


Figure 1 c

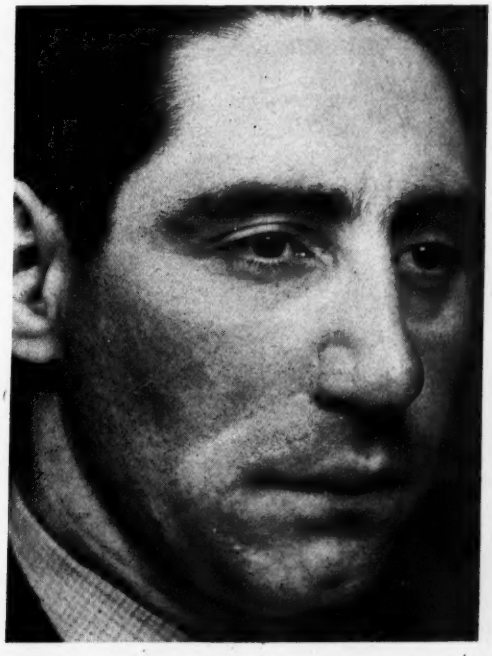


Figure 1 d

Fig. 1 a. Injury to face and nose resulting in bevelling and deformity due to improper surgery.

Fig. 1 b, c, d. Eight months after repair. Minimal scar barely visible. Note reestablishment of nose in proper relationship to adjacent cheek. Sufficient undercutting insured excellent cosmetic result despite the fact that the scar is against the lines of Langer.

Fig. 2 a. Facial wounds two weeks after injury. Improper suturing done immediately after injury.

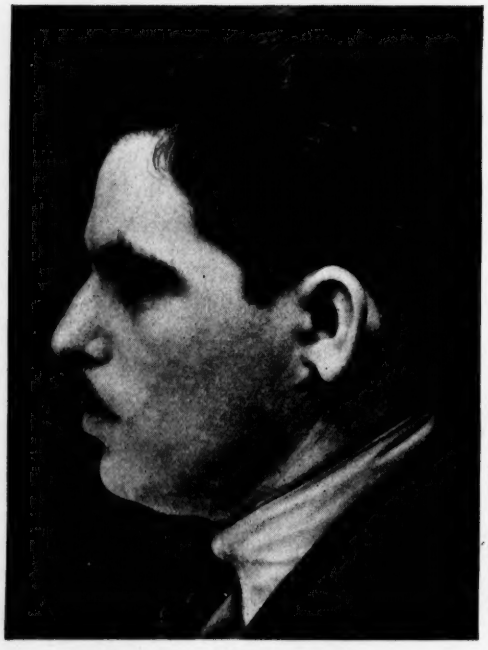


Fig. 2 b. Three months later after proper undercutting and repair. Note normal realignment of nostril.

the body since the face is the seat of expression and modulator of the voice.

2. The lines of Langer must be carefully considered in facial repair. For example, an elliptical wound of the forehead can be transformed into a straight wound following the lines of Langer before sutures bring the opposing edges of the wound together, thereby producing a much better cosmetic result. Though a wound against the lines of Langer is more difficult to repair, nevertheless, with proper undermining which eliminates tension, good results can be obtained (Fig. 1, a-d).

3. The face differs from the extremities or the trunk because of the presence of the eyes, mouth, nostrils, and the ear canals. Wounds involving these areas must be studied carefully. The approximation of the opposing edges of the wound must be accurate. The tissues must be brought into proper normal anatomical relationship with each other. This will obviate the possibility of distortion or deformity of an orifice. For example, a wound involving the rim of the nostril must be so repaired that the rim looks normal compared with its mate of the other side (Fig. 2, c-d).

4. The importance of symmetry to the face is obvious and the surgeon must repair a wound in a manner in which the affected side approximates the appearance of the other normal side.

5. The nose and chin jut out from the central plane of the face and are important to symmetry. For example, an injury throwing the superficial or deep tissues, or both, of the nose or chin off the central plane of the face will affect the symmetry of the features. Here the surgeon must aim to re-establish the normal relationship of the parts.

The method the author has used in treating the average superficial wound of the face is simple in technic and any physician or interne, regardless of train-

ing, can utilize it effectively when, in the event of an air raid he is suddenly called upon to treat facial wounds. The first aid student should be acquainted with this also so that he or she may know what to do and what not to do before the physician arrives.

An important point to remember is that Nature is seldom kind when it inflicts an injury to the face. In wounds affecting the superficial structures of the face at an angle of ninety degrees to the facial integument approximation is simple. Unfortunately, facial wounds, lacerated or otherwise, usually injure the skin and underlying superficial structures at an acute or obtuse angle, in such a manner that one side of the wound is raised from the underlying structures of the face, while the other edge of the wound is left intact. This type of wound, which is very common, may be superficial or deep (Fig. 2 e). This means that Nature has undermined, so to speak, the skin of one side, though not as accurately as the plastic surgeon would do it.

Case 2 is an illustration. When hemorrhage is arrested the first attempt at healing is represented by the thin blood clot covering the surface. Microscopically, the clot is composed of a meshwork of fibrin forming the foundation for the building of new tissue to replace that demolished by the accident. New blood vessels spring from the intima lining the minute mother vessels in the depth and sides of the wound, as well as under the raised side of the skin. Creeping along the meshwork of fibrin for support, these young vessels soon carry a current of blood from the affected area. Growing up with, and surrounding these capillaries are legions of young connective tissue cells working and multiplying prodigiously without rest until the gap is covered.

The wounded area thus becomes filled with granulation tissue. The dermal structures grow from the sides of the surface epithelium toward the center, until the new tissue is completely covered by a thin film of epidermis. If the area is infected, a greater inflammatory response follows, with subsequent secretion on the surface of the wound. Infection delays healing and makes it more difficult for the connective tissue to close the gap. Sooner or later, however, the protective elements in the inflamed area overcome the infection and permit the connective tissue to bridge the wound.

Hair, nerves, sebacious, and sudoriferous glands have been permanently destroyed. Because of their highly specialized nature they are unable to regenerate. Connective tissue takes their place. Thus the

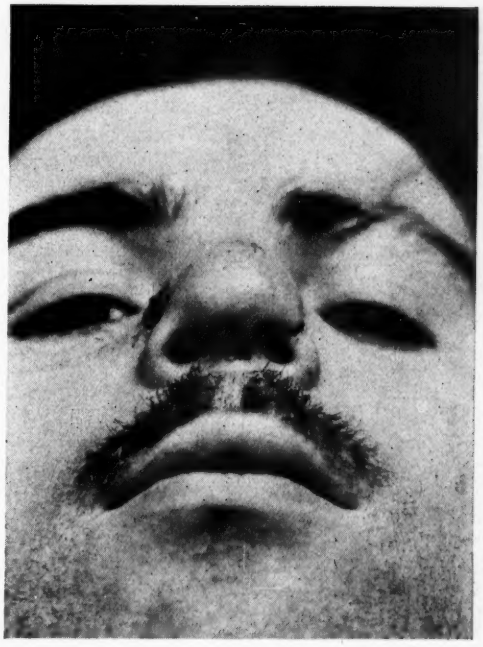


Fig. 2 c. Showing deformity of nostril and eyebrow.

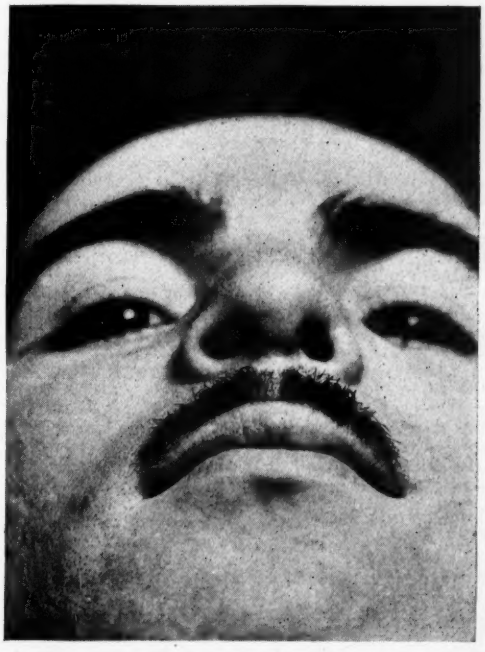


Fig. 2 d. Three months after repair.

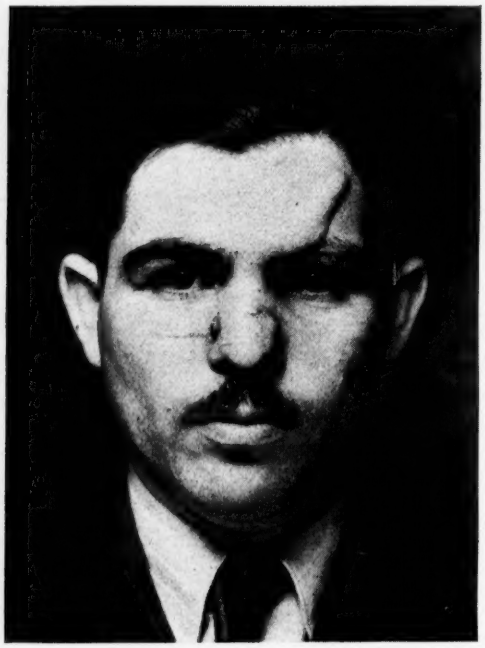


Fig. 2 e. Full view of wounds two weeks after injury. Improper suturing immediately after injury.

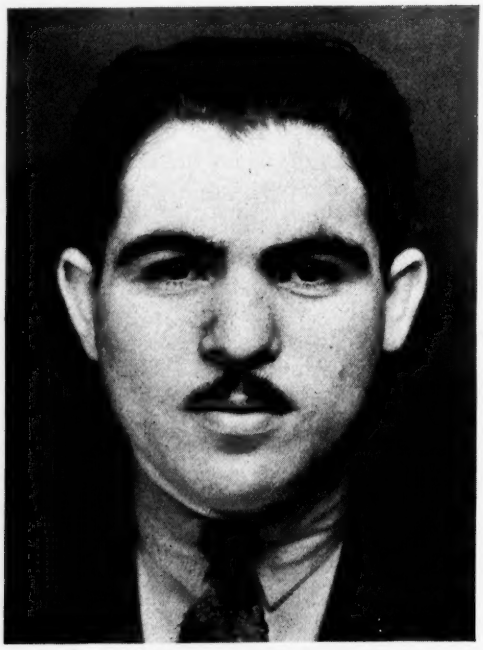


Fig. 2 f. Three months after surgery.

scar is smooth, with none of the marking or lines of the normal integument, and looks very conspicuous by contrast. Loose connective tissue and vascular spaces give the new scar its purplish appearance. The connective tissue cells multiply and those that lie about the blood vessels press on them and gradually milk them of their blood. In time the maturing connective tissue cells contract and the scar becomes successively red, pink, and finally white. The greater the loss of tissue, the greater will be the scar contraction and resultant disfigurement. Here lies the reason why the average wound affecting the facial integument at an angle looks so disfiguring when healed. The side that has been raised from the cheek or nose or forehead, when left to heal by itself or quickly brought back to its bed by means of sutures, is healing underneath. When contraction takes place there is a change in the normal dynamics of the area. Not only is the visible scar contracting but the scar under the side of the skin is contracting as well. Since the visible scar acts as a fixed point, the lateral invisible scar underneath contracts from side to side, causing a bevelling of the parts which distorts their normal anatomical and cosmetic relationship. In many instances such disturbances of stress and strain can be avoided by proper measures and thus obviate ugly scars.

1. The first aid student should merely dress the area and control bleeding, if possible. He should not attempt to remove foreign bodies. This may spread the infection if not carefully done.

2. The treatment of shock, hemorrhage, relief of pain, the protection of the wound against further injury, and prophylactic inoculation are all important, and should be carried out by a physician.

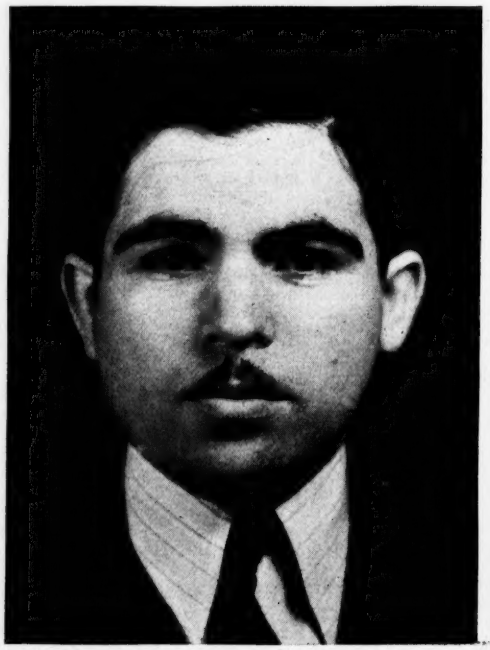
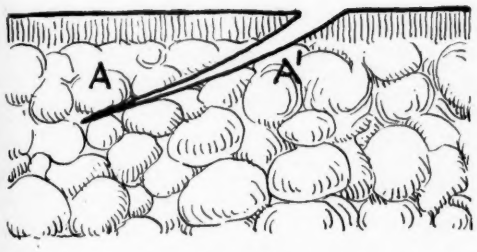
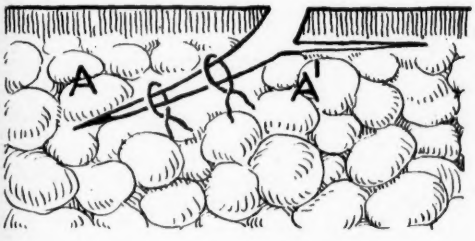


Fig. 2 g. Final result eight months after proper surgery.



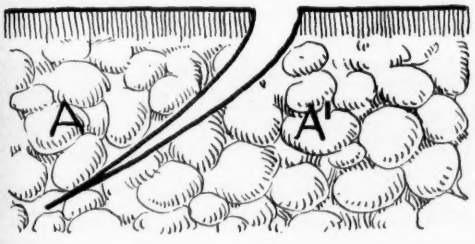
a

Fig. 3 a. Wound at angle of facial skin.



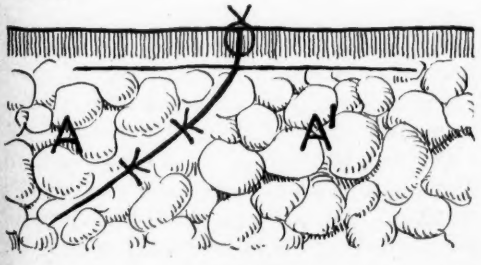
c

Fig. 3 c. Since A has been undermined as result of injury, A′ should be undercut before bringing skin edges together with interrupted sutures of fine silk as shown in Fig. d.



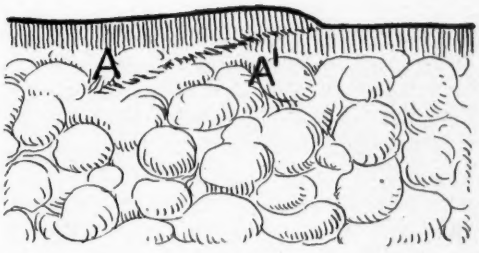
e

Fig. 3 e. Superficial wound reaching close to muscle.



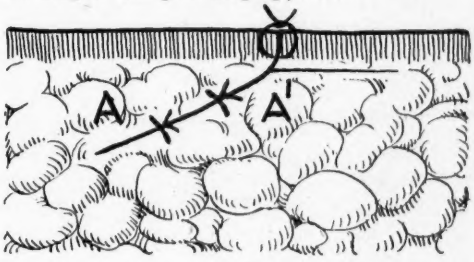
g

Fig. 3 g. Accurate approximation of skin edges with interrupted sutures of fine silk.



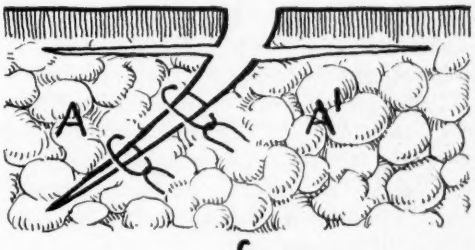
b

Fig. 3 b. After healing has taken place. Note bevelling of skin producing ugly scar.



d

Fig. 3 d. Shows result immediately after proper surgery. Subcutaneous sutures indicated only when feasible without distorting skin flap above A.



f

Fig. 3 f. Undercutting of A and A′ and bringing adipose layer together with interrupted catgut ties.

The important thing to remember is that the wound should be treated within the first six hours after the accident if possible. And this should be possible in most instances immediately after an air raid in a large city. These are the hours of contamination and not infection.

TREATMENT

Use soap and water gently on the wound. If there is oil or grease around the wound, the gaping edges should be

approximated with the fingers for the moment, and benzine used to remove oil or fat particles. Remove foreign bodies. Treat the skin up to the periphery of the wound with iodine, then with alcohol. Treat the wound and its depths freely with normal saline solution. No attempt should be made at surgery at this particular moment. Treat the wound with normal saline solution for the next 48 hours. Between treatments, pack the wound gently with gauze and cover it with an appropriate dressing. After 48 hours remove the last dressing and prepare for surgery.

Débridement should be thorough in all instances. A small particle of dead tissue may be the focus of subsequent infection. Débridement must be done skilfully when dealing with the face since the loss of too much tissue will only add to the disfigurement of the patient. At no time should proper débridement be sacrificed for this reason.

Naturally if the wound is treated after the hours of contamination, and has become infected, such infection must be controlled before surgery is undertaken. To do this measures are taken: (1) to rid the wound of purulent exudate and necrotic tissue and establish proper drainage, (2) to limit bacterial growth, and (3) to intensify the defensive reaction of the tissues.

The technic advocated is to undermine the other side of the wound sufficiently before bringing the opposing edges together. This allows for proper union without tension, which not only promotes optimum healing, but prevents subsequent distortion and bevelling of the scar. (Fig. 3 a to d). Sutures under tension are of no value; they cause necrosis and leave bad scars.

If the wound is such that it injures the tissues at an acute angle but involves more of the subcutaneous tissue, it is well to attempt to approximate the subcutaneous fat. This should be attempted only when the subcutaneous ties do not distort the integument above on the side Nature has raised in the injury (see Fig. 3, a-d, showing theoretical consideration involved in suturing of parts).

If the injury extends deeply, down to the muscle, it is important to carry out the following technic.

Undermine the skin of the side which has been raised in the injury so that the subcutaneous fat is separated from the skin itself. Duplicate this procedure on the other side of the skin that has not been raised from the face (Fig. 3, e-g), that is, undermine sufficiently to avoid tension in subsequent suturing. Then carefully bring together the subcutaneous tissue with interrupted sutures of fine catgut. After this, the proper approximation of the opposing edges of the skin can be accomplished readily with interrupted sutures of fine silk, number four to six o. These sutures should be removed from within two to five days.

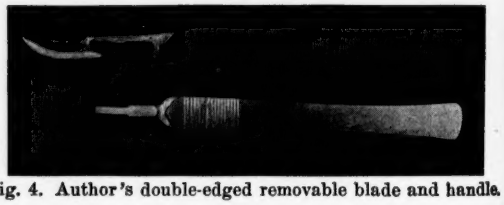


Fig. 4. Author's double-edged removable blade and handle.

For the purpose of quick and easy undermining of the skin, the writer has used a double-edged detachable knife (Fig. 4). The value of the double-edged feature is obvious; the knife can be used twice as long (and twice as effectively) without change of instrument.

At the bottom of this double-edged blade is a V groove designed to abut the walls in the projection of the handle member. There is an orientation knob on the handle which informs the surgeon which sharp edge he is using. The part of the blade that is not sharp is rib-

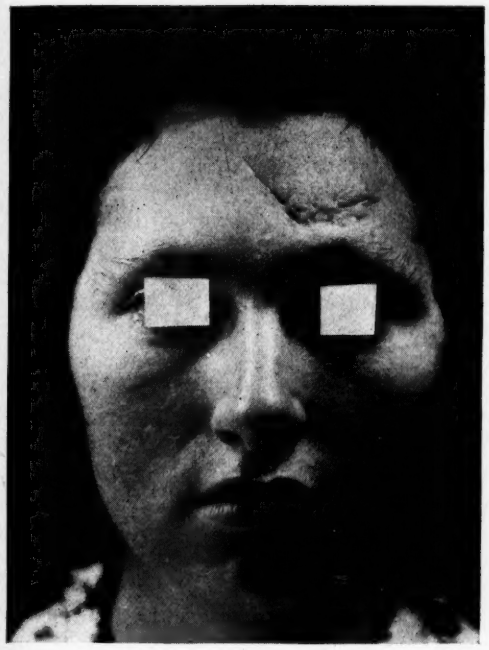


Fig. 5 a. Contused infected wound of forehead improperly treated by immediate suture. Ugly scar after slough of tissue.

Fig. 5 b. Result three months after surgery.

backed to permit easy detachment of the blade from the handle.

Of course the idea of a detachable blade is not new, but the double-edged feature has proved exceedingly useful, particularly in plastic repair. Dr. A. H. McIndoe, head of the plastic reconstructive division of the R.A.F., has used this knife on wounded pilots with good results.

Immediate suturing is indicated in the following types of injuries.

1. In cuts into or through the substance of the nostril, ear or chin, especially where a good sized fragment of tissue remains attached by only a small narrow pedicle. In such instances, cautious trimming of the skin or cartilage borders is often indicated to insure primary union. The sutures must be so placed as to permit proper drainage of blood and serum. Any distortion or collapse of the nostril or external ear should be corrected immediately. The nasal cavity or ear canal should be packed appropriately with vaselinized gauze. Subcutaneous hematoma is relieved or prevented by drainage incision.

2. Immediate suturing is necessary when the injury affects double-surfaced flaps like the nose, ear, eyelid, or lip. This avoids ugly distortions due to disturbances of symmetry of the features as previously indicated.

3. Trap door flaps raised from the face with little or no subcutaneous tissue. Here, when there is any doubt about the blood supply, an immediate attempt at accurate suturing of the flap in place endangers the viability of the flap. In such instances one or two tacking sutures are used for anchorage purposes, after which a gentle pressure dressing is applied. Some epithelium is usually lost in such cases but more often than not quite

a usable part of the flap survives for secondary repair. However, even when these tacking sutures are utilized, the edge of the wound opposite the raised flap should be undermined as already described. This last procedure helps reestablish the normal dynamics of the area.

4. All wounds of the nasal integument, its underlying cartilage and septum should be closed with sutures placed as accurately as possible in order to avoid deformities difficult to correct later. In these skin wounds the side opposite the raised flap must be undermined as already illustrated. Finally, it must be remembered that in badly contused wounds an attempt to do a primary skin suture is not apt to produce a pleasing scar, as the risk of suppuration and necrosis is enhanced. Here proper judgment will indicate when surgery is to be undertaken.

5. We have discussed wounds received in civilian life where hospitals are within easy reach. On the field of battle, however, where hospitalization may not be readily available, sulfa therapy, locally and orally, is indicated: (1) The sulpha drug is powdered freely upon the débrided area; (2) Sulphathiazole is given by mouth, in a dosage of 15 grains every four hours for three days post operative or post trauma.

SUMMARY

In an angular wound to the superficial structures of the face, Nature undermines the skin on one side of the wound. Therefore, the technic advocated by the author, when surgery is indicated, is to undermine the other side of the wound sufficiently before bringing the opposing edges together, in order to allow for proper union without tension. This not only promotes optimum healing, but prevents subsequent distortion and bevelling of the scar.

SUMARIO

En una herida angular de la extructura superficial de la cara Naturaleza mina la piel en un lado de la herida. Por lo tanto, la técnica aconsejada por el autor, cuando cirugía es indicada, es el minar el otro lada de la herido antes de aproximar los lados, para permitir la propia union sin tensión. Esto no solamente activa la propia circulación y cicatrización no produce retarccion de la cicatriz.

RÉSUMÉ

Dans une plaie angulaire des tissus superficiels de le visage, la nature détache la peau d'un côté de la blessure. C'est pour cela que l'auteur recommande qu'on détache le côté oppose de la plaie suffisamment pour pouvoir effectuer un rapprochement des marges de la plaie, afin d'obtenir ainsi une apposition sans tension. Cette technique amène la meilleure guérison, et prévient toutes les distortions et biseautages de la cicatrice.

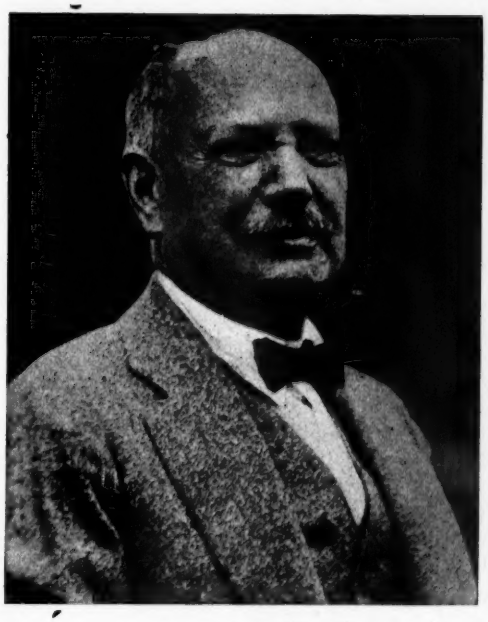
INTERNATIONAL COLLEGE OF SURGEONS

For information concerning membership in the International College of Surgeons, write to Mr. Ralph Osborne, Business Secretary, International College of Surgeons, 1512 Spruce St., Philadelphia.

Max Einhorn, M. D.

HYMAN I. GOLDSTEIN, M.D.*
CAMDEN, NEW JERSEY

DOCTOR EINHORN was born January 10, 1862, in Suchowol, a small town near Grodno (Russia, later Poland), son of Abraham and Sara Einhorn. He attended Friedrich-Wilhelm Gymnasium, later (1879) he entered the government gymnasium in Riga. He was enrolled as a medical student in St. Wladimir University in Kiev. In 1881 he continued his studies in Friedrich-Wilhelm University in Berlin, where he met R. Virchow (1821-1902), H. L. F. Helmholtz (1821-1894), Salkowski (1844-1923), Leyden (1832-1910), H. Senator (1834-1911), v. Bergmann (1836-1907), and Paul Ehrlich (1854-1915). In the Frerichs Clinic, under Ehrlich, Einhorn (1883) did some experimental work on diabetes mellitus (with frogs). Doctor Einhorn received his doctor's diploma (magna cum laude) in March 1884 and in April 1885 he was licensed to practice medicine in Germany. During August and September, 1884, he served as ship's physician on the "S.S. Katie" (Stettin-Lloyd), which brought him to Halifax and New York. It was during his first (1884) brief visit to New York City that he met Dr. Samuel James Meltzer (1851-1920). He then returned to Berlin to pass his examinations for State License which he received in April, 1885. In June, 1885, Doctor Einhorn arrived in New York and engaged in general practice in Harlem. In October, 1885, he became connected with the German Hospital (Lenox Hill Hospital) as house physician in the division of internal medicine, and physician in the German Dispensary. At this time he met Abraham Jacobi (1830-1919), Carl Lellman, Langmann and Conrad.



Max Einhorn, M.D.

Doctor Einhorn was married to Flora Strauss of New York on March 30, 1892. It was in 1887, fifty-five years ago, when Einhorn began to specialize in gastrointestinal diseases. In March, 1888, he visited the clinic of Carl Anton Ewald (1845-1915), in Berlin, and worked with him for four months. He returned to New York in August, 1888, when he became assistant to Dr. J. Rudisch, who took over the practice of Abraham Jacobi (1830-1919), and thus Einhorn was given the rare opportunity of meeting

*Chairman of the Section on Gastroenterology, State Medical Society of New Jersey (1940); President of the New Jersey Gastroenterological Society (1941).

with the best families and doctors in and about New York.

In 1889, Einhorn became Instructor in Internal Medicine of the New York Postgraduate Medical School, later Associate Professor and Professor of Medicine. In 1922, Einhorn was made Professor Emeritus and consulting physician of the New York Postgraduate Medical School.

Fielding H. Garrison (1870-1935) in his "History of Medicine" (4th Ed., 1929, Saunders Co., page 634) speaks of John Conrad Hemmeter (1864-1931), of Baltimore and Max Einhorn of New York, as "prominent among American specialists in gastro-enterology." Of Einhorn, he says — he "has invented many ingenious devices and instruments, such as gastrodiaphany (1887), stomach-buckets (1890), duodenal buckets (1908), and is author of well-known treatises on diseases of the stomach (1896), of the intestines (1900) and dietetics (1905)." On page 736 Garrison states: "Duodenal intubation with the small tube is associated with the name of Einhorn."

In Professor Louis Ruyter Grote's (Frankfurt a. M.) "Die Medizin Der Gegenwart in Selbstdarstellungen," volume 8, pages 1-24, 1929 (Leipzig) appears an excellent autobiography by Max Einhorn, including his bibliography of one hundred and seventy-six (176) publications to 1927. Einhorn has to his credit more than three hundred (300) scientific contributions to medical literature—beginning with his Inaugural-Dissertation: "Ueber das Verhalten de Lymphocyten zu den weissen Blutkörperchen" (Friedrich-Wilhelms-Universität zu Berlin), March 21, 1884 (Stuhr, Berlin) to his latest contribution on "Syphilitic Ulceration of the Stomach," which he presented before the Sixth Annual Convention of the National Gastroenterological Association June, 1941, in New York City.

Einhorn was in charge of the section on "Progress in Gastroenterology" (with Robert D. Rhein, Philadelphia) in The American Journal of Gastroenterology (1911-1914). He was a Director of the Archiv für Verdauungs-Krankheiten (Berlin), 1905-to-date, and associate Editor of the Medicinische Monatschrift (New York). In this journal appeared his articles on "Die Gastrodiaphanie (*I*:559-560, Nov. 1889) and "Wanderleber" (*I*:351-353, 1889). Another article "On Gastrodiaphany" appeared in the New York Medical Journal *56*:626-630, Dec. 3, 1892, in which, in addition to *transillumination* of the *stomach,* he suggested *photographing* the *interior* of the *stomach.*

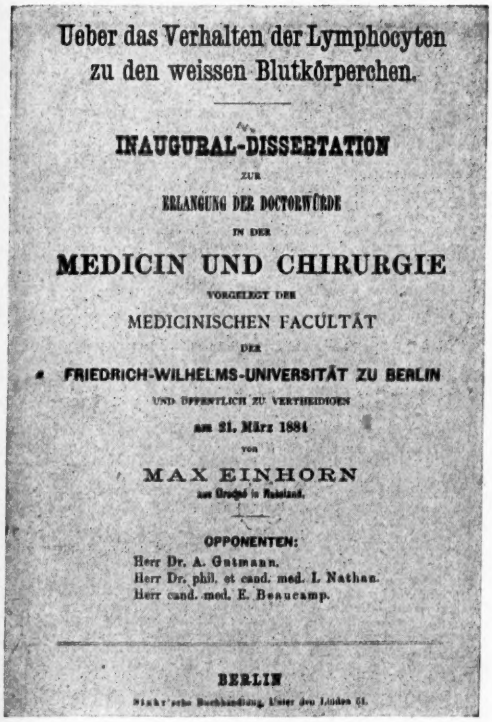
His "Observations on Radium" was published in the Medical Record *66:* No. 5, 164-168, July 30, 1904, while a brief report "On Radium Photographs of the Stomach" appeared in the Archives of Physiological Therapy, *2*:115-116, September, 1905.

Einhorn's early reports on "*Roentgenography* of the *Stomach*" (Medical Record *70:* No. 15, 572-575, October 13, 1906), and "*Radium* Receptacles for Esophagus, Stomach and Rectum" (Med. Record *65*:399, 1904) are of interest.

Einhorn introduced pure radium bromide (radiodiaphane containing 0.05 gm.) into the stomach, to obtain radium photographs of the stomach (1905)!

In this brief sketch, mention should be made of his books on "Diseases of the Stomach," "Diseases of the Intestines," "Lectures on Dietetics," and "The Duodenal Tube."

Doctor Einhorn early used a *metallic dilator* for cardiospasm and his own modification of the *esophagoscope,* the powder blower and sprayer for direct treatment of the interior of the stomach!



Ueber das Verhalten der Lymphocyten zu den weissen Blutkörperchen.

INAUGURAL-DISSERTATION

ZUR

ERLANGUNG DER DOCTORWÜRDE

IN DER

MEDICIN UND CHIRURGIE

VORGELEGT DER

MEDICINISCHEN FACULTÄT

DER

FRIEDRICH-WILHELMS-UNIVERSITÄT ZU BERLIN

UND ÖFFENTLICH ZU VERTHEIDIGEN

am 21. März 1884

von

MAX EINHORN

aus Grodno in Russland.

OPPONENTEN:

Herr Dr. A. Gutmann.
Herr Dr. phil. et cand. med. L. Nathan.
Herr cand. med. E. Beaucamp.

BERLIN

Stahr'sche Buchhandlung, Unter den Linden 61.

He is an honorary member of the Gastroenterological Society of Japan, the National Gastroenterological Association, the American Gastroenterological Association, the Gastroenterological Society of Mexico, the German Society for Digestive Diseases, Corresponding Member of the Medical Society of Munich and of Paris, and is an honorary fellow of the International College of Surgeons.

Einhorn was one of the early users of *roentgenography of the stomach*—among whom may be mentioned Guido Holzknecht (1872-1931), Martin Haudek (1880-1931), Williams (1897), Hermann Rieder (1858-), Henry Hulst (1859-), J. C. Hemmeter (1864-1931), Geo. E. Pfahler (Philadelphia), Biggert, G. G. Burdick (Chicago), W. B. Cannon (1871-) (who introduced the bismuth meal in animals, to study the movements of the stomach, 1897-1898), and F. M. Groedel (1881-) who revised the work of Ludolph Brauer ("Röntgendiagnostik"). Holzknecht, Haudek and Groedel popularized the use of the fluorescent screen and made the first good serial plates of the stomach in man (1909-1912). Soon after E. A. Graham and W. H. Cole devised Roentgenography of the Gall-bladder (1923- 1924), Einhorn used cholecystography and published several reports (July 15, 1925).

"The Gastrograph" (New York Medical Journal, September 15, 1894), "Hepatography" (October 25, 1927), "Wanderleber" (1889), "Rumination in Man" (1890), "Syphilis of the Stomach," and "Sprays in the Treatment of Stomach Diseases" (October 1891) are interesting Einhorn publications.

To recite a few of the details of some of his successful achievements and to salute him by his titles of honor is, on my part, a happy and friendly gesture of honor, fully due him at this time.

He has for nearly fifty-eight (58) years made notable contributions to medicine in general and, during its development in this country, to *gastroenterology* in particular.

The extent and breadth of his scientific and cultured interest is fully shown, not only by his contributions to medical literature, but by his philanthropic aid to the Lenox Hill Hospital (N.Y.C.) and to some of our world renowned medical refugees and scientists in other lands. He was a close and valued friend of the late Ismar Boas who recently died in Vienna. His writings give us the better aspects and viewpoints of the German school.

His accomplishments and learned contributions to *gastroenterology* brought him the deserved honors above mentioned. It is, however, more particularly as a modest, dignified fellow of the Na-

tional Gastroenterological Association and as an active participant in its scientific sessions that we all love to think of him now and in the future years to come.

In this country he fully represented the Ewald-Boas School — and how well does Einhorn take their place!

"Schön ist es überall, ein stellverträter zu sein,
Zu gelten für die Welt, und nicht für sich allein"

"Glorious it is everywhere, to take another's place,
To be worthy of the world, and represent the race."

Thus, wrote Friederich Rückert of great prophets and teachers!

I salute a pioneer American Gastroenterologist, a gentleman, a humanitarian, a friend — and I extend to him all good wishes and many happy returns!

1425 Broadway, Camden, N. J.

December 22, 1941

MAX EINHORN

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U. S. War Bonds are good insurance for the future of unimpaired scientific endeavor.

Professor Nicolai N. Burdenko

Honorary Fellow—International College of Surgeons (Geneva)

NICOLAI N. BURDENKO—Academician, scientist, war hero, patroit and organizer of Russia's Neurosurgical Clinic, and prolific writer on leading surgical topics — is not a stranger among American surgeons. Neither are American surgery and American leadership unknown to him, for he freely tells us of his contact with leading American surgeons who have performed numerous and major operations in his clinic at home.

Prepared for ministerial and religious vocation, the urge toward science, and especially surgery, overpowered his early doubts, when he apparently was scheduled for theological education and training. As a pupil of Pavlov, the eminent physiologist, he again revealed his selection and gift for the specialty of surgery to which he has devoted his long and fruitful career: when he was given the choice of laboratory co-operation with the great Pavlov, he declined that marvelous opportunity and offer in order to dedicate himself to the science and art of surgery in his own and masterly way.

His biography is thrilling with military experiences in the service of his country. Wounded in battle, he has in return saved the wounded under fire, for which he earned the Cross of St. George. His organization of the Field Surgical Service in military operations is as yet unwritten upon the annals of military service, so vast and far reaching have been his contributions to prophylaxis in the prevention of infections and in the rehabilitation of the wounded for further service. At no time, and nowhere, in recorded military experience is to be found a higher percentage of recoveries and rehabilitations.

Professor Nicolai N. Burdenko

The originality of his management of front line surgery, or first aid to the wounded, on such an enormous scale will be master lessons in the annals of surgery of the future. They will remind us of the accomplishments and originality of the Chief Surgeon of Napoleon's Grande Armée, Baron Larrey, who, on a smaller scale than Burdenko, organized the ambulance service as carried out in the Battle of Waterloo and which has never been duplicated. Himself three times wounded, Larrey was the inventor of the celebrated flying ambulances and the originator of first aid to the wounded

in the ultra modern sense, taking hold with his hundreds of ambulances directly in the battle front, and not waiting until the battle was over, as previously practiced. Napoleon called him "the most honest man I have ever known."

Burdenko's patriotism is inspiring, to say the least. His words to his son in the naval service of his country are stirring principles and maxims well worth emulation by lay and professional men of today.

His scientific contributions to the graphic appreciation of the modus operandi of the phenomena of shock in major surgical interventions, as shown upon the sound film reproduced from his clinic, are incomparable and plainly expressed lessons of surgical trauma and surgical technique.

DESIDERIO ROMÁN, M.D.

GUILD ACTIVITIES

MONTANA GUILD

The Montana Surgical Guild met at the Columbus Hospital, Saturday, May 23, affiliates and visitors attending. Dr. Roger Anderson of Seattle, as guest surgeon, contributed much to the meeting.

Dr. Anderson demonstrated fracture apparatus. A dry clinic was next held by Dr. Anderson: many cases of fractures now under treatment were presented and discussed. Surgical operations were demonstrated in three operating rooms: removal of osteoma of humerus, scalenus anticus syndrome, carpectomy, pelvic laparotomy, herniotomy, hydatiform cyst, and tonsillectomies.

At 12:30 luncheon was held at Hotel Rainbow. Round table discussions on fractures. At 2:30 P.M., reconvened with Dr. Garberson of Miles City, Past President, presiding. Discussions of the morning's surgery, Drs. Allard, Attix, Irwin, and Anderson leading the discussions. Dry clinic by Dr. Anderson. The following cases were presented: (1) Tuberculous hip joint (fused by fixation). Discussion of merits of Venadium cup. (2) Recurrent Osteomyelitis of femur (11 years' duration). (3) Fracture of cervical vertebra. (4) Amputation: stump of leg (poor healing).

Talk on "Calcium and Vitamin Therapy" by Dr. Roger Anderson, and one on "Refrigeration Anesthesia for Amputations" by Dr. Garberson. Case histories. Discussion. Meeting adjourned at 5 P.M.

Business Session, Dr. Garberson presiding. Minutes of last meeting and financial statement approved. Discussion on Army and Navy Medical Service by Doctors Fredrickson, Vasko, Sussex, and Smith. Dates of future meetings to be left open to the discretion of the Officers. An attempt will be made to hold meetings in conjunction with other medical meeting in the state. Talk on progress of the International College of Surgeons by Secretary-Treasurer, Dr. J. C. MacGregor. The meeting adjourned followed by the banquet held at Hotel Rainbow at 7 P.M. with Dr. H. W. Fuller, Vice-President of the Cascade County Medical Society, presiding. After dinner, a paper on "What the Montana Surgeon Can Do to Help Win the War" was given by Dr. Roger Anderson. This lecture was supplemented by motion pictures and lantern slides. Members of the Cascade County Medical Society, Sisters of Columbus Hospital, and surgical nurses from both hospitals attended lectures.

Vote of thanks of the Surgical Guild and Cascade County Society was extended to Dr. Anderson. Meeting adjourned.

J. C. MacGregor, M.D.

The President's Page

Fellow Members:

It is gratifying at this time to report that instead of the retarding influence we anticipated from war inroads upon our increasing membership, we have been pleased and encouraged by the steady influx of inquiries and applications received at our Business Office and referred to the Credentials Committee for study and investigation.

Our complacency toward the slowing up of our heretofore inspiring growth has been an amazing experience, for we had made up our minds to abide for the duration and not to expect more than was logical under existing circumstances. It is therefore not only gratifying, but most revealing and thrilling, to see the additions made to our membership, to our Chapters and to our representation of the College in all parts of the world.

At our Council meeting in Atlantic City the week-end of June twelfth, I exhibited to both Council and guests a pictographic chart of the United States Chapter, illustrating the comprehensive distribution of our membership throughout the forty-eight states of the nation, as well as the diagrammatic localizations of the Board of Governors as now constituted. From this chart numerous deductions can be drawn and new ideas evolved for the future development of the United States Chapter. It reveals not only numerical arrangement of our membership, but the fact that every state in the Union is represented in our growing membership.

On the other side of this Chapter map is a display of the twenty-one flags of the nations of the Western Hemisphere, the so-called "Pan American international solidarity," and marked with red stars we demonstrate that in the twenty-one republics of North, Central and South America, there are many well organized, chartered and functioning Chapters of the International College of Surgeons, and that we are well represented by National Regents and Honorary Fellows in all the other Latin American countries in which organization of Chapters is well under way.

It is of special interest to tell you that at this Council meeting we had the pleasure and the honor of greeting Professor Jorge Cavelier and his charming wife, of Bogota, Colombia, who brought us the announcement that the Colombian Chapter of the International College of Surgeons, which he represented, had been fully organized, thus adding another star to our Latin American organization of Chapters, as illustrated in the map of flags. Professor Cavelier's address to the Council was one more heartening evidence of the solidarity and scientific co-operation and union of ideals embodied in the basic principles by which the International College of Surgeons beckons all nations and all peoples of the world of science.

In his brief address, Professor Cavelier made it clear to us that the united effort of the Latin American countries is ours, and that the future for the de-

velopment of the ideals of the College reflects the brightest prospects.

A globe of the world, marking the countries in the Western Hemisphere, in Europe, Africa, in the Near and Far East where the College is represented by Regents, Honorary Fellows and Associates, demonstrates the dissemination of the scientific spirit, cordial friendship and fruitful objectives for which the International College of Surgeons stands.

Wishful thinking and any other derivatives of optimism do not prompt these cheering and moving concepts. It is, indeed, the realities confronting us which necessitate our taking stock of the progress of our organization. The Journal of the International College continues, with every issue, to arouse scientific appreciation, and our Guilds, encouraging the 'get-together' of our Chapter's scheme for post-graduate teaching and experience in basic knowledge of surgery and surgical specialties, attracts the attention of the younger generation of surgeons, while the earnest co-operation of the seniors and leaders who seek the higher standards and perfection in our science and art, carries on.

Our Board of Governors and the Regents, well aware of our task and responsibility, will lay emphasis upon the educational and liberal premises of the College, and upon the international aims and aspirations which seek constructive co-operation and not duplication of any existing agencies endeavoring to assist in promoting and securing efficiency.

DESIDERIO ROMÁN, M.D.

CHAPTER NEWS

COLOMBIAN CHAPTER

Under the chairmanship of Professor Jorge E. Cavelier, Dean of the National Medical University, Bogota, Colombia, South America, the first meeting of the Founder Fellows of the **Colombian Chapter** of the International College of Surgeons took place at the Clínica de Marly in Bogota, on May 28, 1942, for the purpose of completing the formation of the Chapter.

The following professors, chiefs of clinics, and departmental surgeons participated. Doctors Hernando Anzola Cubides, Rafael Barberi, Jorge Bejarano, Enrique Botero Marulanda, Dario Cadena, Jorge E. Cavelier, Juan N. Corpas, Humberto Correa, Pedro E. Cruz, Alvaro Fajardo Pinzón, Pablo Gomez Martinez, Jorge Helo, Hernando Matallana, Cesar A. Pantoja, Luis Piñeros Suarez, Manuel Antonio Rueda Vargas, Juan C. Martinez, Roberto Serpa, Santiago Triana Cortés, Edmundo Rico, Hernando Velasquez and Jorge Salcedo Salgar. All of these constitute the Founder-Fellow group of the Chapter.

It was unanimously decided to proceed with the adoption of the Constitution and By-Laws as outlined by the Constitution and By-Laws of the International College founded in Geneva.

Professor Cavelier spoke glowingly of the ideals and high aims of the College, its various contributions to the progress of surgery, and particularly to the education of younger surgeons. He stated that some years ago he was made Regent of the College for the purpose of founding the Chapter. He studied its activities and aims thoroughly, from every point of view, and concluded that the aims of the International College of Surgeons should be encouraged by all who have the interest of surgery at heart. All Founder Members pledged themselves to loyally support the Constitution and ideals of the College.

Following Professor Cavelier's talk, Professor Jorge Bejarano stated that he also, during his visits to the United States, and after studying the Constitution and By-Laws of the International College of Surgeons, had reached the same conclusion as had Professor Cavelier and that he was proud to greet the select group of surgeons who gathered

FOUNDERS OF THE COLOMBIAN CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS

1: Dr. Hernando Anzola Cubides, 2: Dr. Humberto Correa, 3: Dr. Santiago Triana Cortés, 4: Dr. Roberto Serpa, 5: Dr. Jorge Helo, 6: Dr. Hernando Matallana, 7: Dr. Cesar Augusto Pantoja, 8: Dr. Enrique Botero Marulanda, 9: Dr. Pedro Eliseo Cruz, 10: Dr. Juan N. Corpas, 11: Dr. Luis Piñeros Suarez, 12: Dr. Edmundo Rico, 13: Dr. Rafael Barberi, 14: Dr. Manuel Antonio Rueda Vargas, 15: Dr. Hernando Velasquez, 16: Dr. Pablo Gomez Martinez, 17: Dr. Dario Cadena, 18: Dr. Alvaro Fajardo Pinzón, 19: Dr. Jorge Bejarano, 20: Dr. Jorge E. Cavelier.

in the Clínica de Marly on the momentous day of the formation of the Colombian Chapter, and congratulated all the participants. Professor Dario Cadena, who participated in the first Assembly of the International College of Surgeons some years ago, spoke with equal enthusiasm and eloquence.

An address by Professor Pedro Eliseo Cruz followed. He pointed out the various functions of the College to which every progressive surgeon should subscribe and which if practiced, as they will be, will redound to the credit of surgery and the advancement and betterment of surgical activities throughout the world.

Dr. Cesar Augusto Pantoja stressed the advantages of the autonomy of the Chapter, and stated that during his sojourn in the United States he was inspired by the enthusiasm of the members of the College. He presented the following resolution: "Be it resolved that the Founder group of the Colombian Chapter of the International College of Surgeons be considered formed as of this date and express homage and admiration to one of its founders and ardent sup-

porters, Professor Jorge E. Cavelier, eminent surgeon and outstanding figure of the Medical Corps of the National University of Bogota." (Applause)

The following officers were then elected: Professor Jorge E. Cavelier, President; Professor Juan N. Corpas, Vice-President; Professor Cesar A. Pantoja, Secretary, and Professor Alvaro Fajardo Pinzón, Treasurer. The following were elected additional National Regents: Doctors Rafael Ucrós, Pedro Eliseo Cruz, Manuel Antonio Rueda Vargas and Rafael Barberi. The official seat of the Chapter is to be Bogota. The following Founder Members appended their signatures to the organization document: Rafael Barberi, Hernando Anzola Cubides, Jorge Bejarano, Enrique Botero Marulanda, Darío Cadena, Jorge E. Cavelier, Juan N. Corpas, Humberto Correa, Pedro Eliseo Cruz, Santiago Triana Cortés, Hernando Velasquez, Alvaro Fajardo Pinzón, Pablo Gomez Martinez, Jorge Helo, Hernando Matallana, César A. Pantoja, Luis Piñeros Suarez, Manuel A. Rueda Vargas, Juan C. Martinez, Roberto Serpa, Edmundo Rico, and Jorge Salcedo Salgar.

PANAMANIAN CHAPTER

The Panama Chapter, formed August 1, 1941, has now begun to function. The Constitution and By-Laws have been adopted and the executive personnel consists of the following: His Excellency, Dr. Augusto S. Boyd, President; Dr. Ernesto Zubieta, Vice-President; Dr. Luis D. Alfaro, Secretary; and Dr. Roberto Sandoval, Treasurer.

The Specialty Regents are: Dr. Carlos N. Brin, General Surgery and Ophthalmology; Dr. Zubieta, Gynecology and Cancer; Dr. Daniel Chanis, Genitourinary Surgery; Dr. Alfaro, Industrial and Orthopedic Surgery; Dr. Alfredo Melhado, Orthopedic Surgery; Dr. Jaime de la Guardia, Gastroenterology; Dr. Gaspar Arosemena, Obstetrics: Dr. Jorge Ramírez Duque, Otorhinolaryngology; Dr. Sandoval, Radiology; Dr. Máximo Carrizo, Thoracic Surgery; and Dr. Agustín Arango, Oral Surgery.

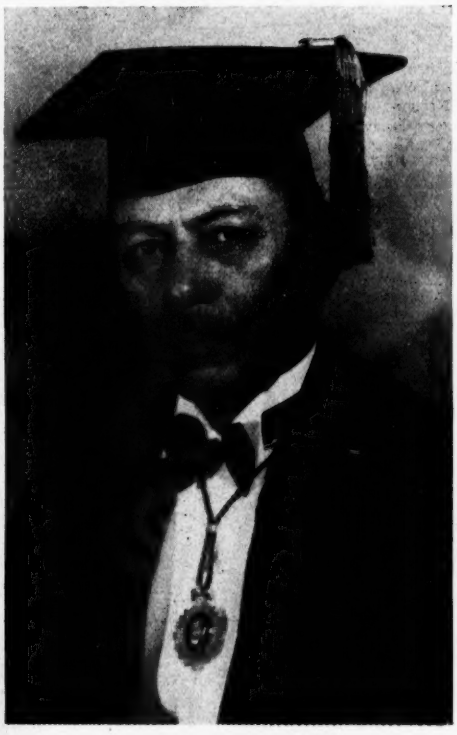
Among other Founder Fellows are the following: Dr. Adolfo Arias, Dr. Arnulfo Arias, Dr. Leopold Benedetti, Dr. Julio Boyd, Dr. Cecilio Castillero, Dr. Guillermo Chapman, Dr. José A. Denis, Dr. Abraham de Castro, Dr. Rafael Estévez, Dr. Alfredo Figueroa, Dr. Guillermo G. de Paredes, Dr. Bernadino González, Dr. Sergio González, Dr. Julio A. Lavergne, Dr. Próspero Meléndez, Dr. Rafael Morales, Dr. Alberto Navarro, Dr. Juan A. Núñez, Dr. Alejandro Pérez Venero, Dr. Luis C. Prieto, Dra. Lidia Sogandares, Dr. J. J. Vallarino.

MEXICAN CHAPTER

Doctors Gonzalo Castañeda, President, and **Darío Fernández Fierro,** Vice President, of the Mexican Chapter of the International College of Surgeons, were honored by the National University of Mexico on the occasion of their completing thirty-five years of service in the University.

Dr. Gonzalo Castañeda is a graduate of the Medical Faculty of the University of Mexico (1898). At present he is physician to the Monte and Pachuca Royal Mining Company; professor and Director of the Science Institute of the State of Hidalgo; and deputy to the congress of the same state. He has been surgeon of the General Hospital and Military Hospital of Mexico City, and Chief Surgeon of the Hospital de Jesús for twenty-seven years.

Dr. Castañeda has held a professorship of Abdominal and Clinical Surgery in the Postgraduate Faculty of the University of Mexico; in the Medical Faculty of the same University he has held professorships in Surgical Technic on the Cadaver and Therapeutic Surgery. At present he is Professor of Clinical Surgery and is also in charge of this course in the Medical Military School. Dr. Castañeda has been Chief of Surgical Teaching and Assistant Director of the Medical Faculty and is a member of the Academy of Professors and a member of the University Council, as well as president of the Academy of Medicine, first president of the Academy of Surgery, president of the Mexican Medical Society, first general secretary of the Syndicate of Physicians and Surgeons of the



Dr. Gonzalo Castañeda

Dr. Darío Fernández Fierro

Federal District, vice president of the Franco-Mexican Medical Society, member of the Academy of Science of Mexico and Havana, member of the Society of Military Physicians, honorary surgeon of the General Hospital, honorary professor of the University of Michoacan, honorary member of the Mexican Society of Traumatology and honorary Fellow of the International College of Surgeons. He has been consultant of the Medical Service of the National Railroad of Mexico and has the rank of Lieutenant-Colonel in the Medical Corps of the National Army.

Dr. Castañeda has written five books on clinical surgery as well as numerous articles.

Dr. Darío Fernández Fierro is a graduate of the Faculty of Medicine of the University of Mexico. After several years post-graduate study in Europe, he returned to Mexico to become Civil Surgeon to the Military Hospital of Mexico (1913-15). Since 1914 he has been Surgeon of the General Hospital; he has been on the staff of the Faculty of Medicine, University of Mexico since 1913 and is at present Professor of Therapeutic Surgery.

Dr. Fernández is Specialty Regent in General Surgery of the Mexican Chapter of the International College of Surgeons. He is a member of the Mexican Medical Association; Society of Physicians of the General Hospital; Medical Society of the General Hospital; Academy of Surgery; Academy of Medicine, International Society of Surgery, a Fellow of the International College of Anesthetists, a Fellow of the American College of Surgeons, as well as a Fellow of the International College of Surgeons. He has published numerous articles on his original technics as well as reports on National and International congresses.

The International Aspects of the Medical Film

The growing power the medical film, as a teaching medium, is apparent to all who have watched the growth of this valuable adjunct to instruction. Realism, which the student desires, is made possible by the advent of color. This has spurred on many film enthusiasts to prepare literally hundreds of films on diverse subjects. So much has been done in a routine fashion that those who are interested in medical photography should pause and evaluate their work.

First: we must determine the purpose for which this enormous collection of films has been produced. The surgeon or photographer who is considering producing a medical film should consider carefully what other experimenters in his field have produced. He should study their approach to the problem and use their experiences to make a more comprehensive film. To illustrate: it would be a great pity to discover in an important textbook which is finally released to the profession after months—sometimes years—of preparation, that some other author has unknowingly duplicated the work and written a similar text.

At the recent Convention of the American Medical Association, a round table discussion was held to evaluate the progress of medical films as a teaching medium. Diverse opinions were expressed. One of these was that there exists a tremendous duplication of effort. A variety of surgical procedures is listed, but subjects which would teach in textbook fashion are rather rare.

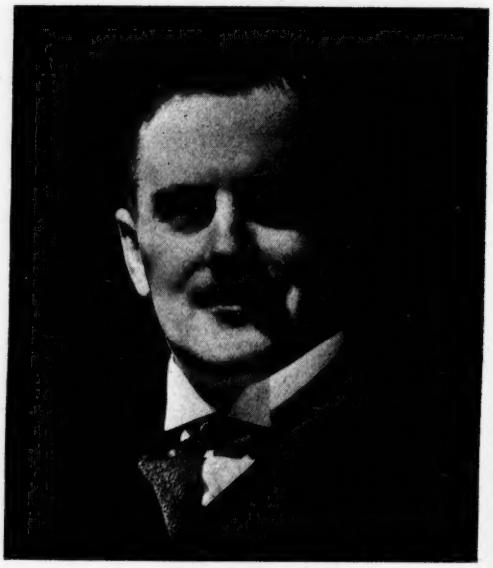
Here is the hub of the situation. The surgeon frequently uses the film as a recording device, and is interested only casually in its ultimate exhibition. His method of preparation is to order the photographer, perhaps a few hours in advance, to "shoot" a film. Had the requirements of the audience entered into the scheme of things, a better planned film would result.

Let us, therefore, study the use to which a film may be put. It may be used as a routine report of some usual or rare surgical condition, in which case its appeal is to the surgeon. The aim should be to make such a film instructive to the premedical or postgraduate student, specialist, general surgeon, or teacher. It should embody clinical and diagnostic procedures, anatomy, pathology, and histology. Intricate detail should be explained by diagram and animations, if the budget permits, or by models in color. These sections should be developed in logical sequence with a tabulation of case results following as a summary.

Prepared in such a manner, the resultant film would become a permanent addition to the teaching adjuncts in a medical school, and would be useful to all concerned. The end result would be that a smaller number of pictures would be made, but their quality considerably improved. The size of the audience that would eventually see the film would be greatly increased.

Members of the International College of Surgeons are prime movers in establishing such an extensive training program to help the young photographer obtain a clearer picture for his limited purpose, and guide him to a more extensive treatment. By setting a course for the ideal, and translating the titles into the many languages of its members, the motion picture film becomes a means of international exchange of ideas in medicine.

Present-day problems, due to the war emergency, have placed a double responsibility upon the medical officer connected with the Armed Forces of the United States. He must learn considerably more about tropical medicine, treatment of war wounds, and emergency reparative surgery. He must, at the same time, keep abreast of modern civilian practice, so that when he returns to his office he can keep in step with present-day trends.



Joseph F. Montague, M.D.

The doctor at home, because of the extra burden of unfamiliar work, finds himself in a delicate position when called upon for specialized information. Into such a disturbed situation, a well planned film program, properly integrated, can bring useful information to the profession at home, to the men in the Armed Forces, and to and from our South American neighbors. The motion picture film can offer in a half-hour review, the condensed information requiring extensive study.

The many members of the profession in Central and South America are invited to use these pages to air their problems. A strong movement is afoot to make available to this section of the world an extensive film program, which will act as a cultural bond between North and South America. Thus, these columns may well become the meeting ground for an international exchange of ideas. Queries and medico-surgical films should be sent to the Board of Medico-Surgical Films, 104 East 40th Street, New York City.

Joseph P. Hackel.

Progress of the Procurement and Assignment Service*

HARVEY T. SETHMAN, EXECUTIVE SECRETARY
COLORADO STATE MEDICAL SOCIETY, DENVER, COLO.

THE Procurement and Assignment Service—whose full and correct title is "The Procurement and Assignment Service for Physicians, Dentists, and Veterinarians; Division of the War Man Power Commission" may properly be called a brain-child of the Health and Medical Committee of the Federal Security Agency on the one hand and the Medical Preparedness Committee of the American Medical Association on the other. Much of the foundation for this war-time agency was laid by American Medical Association executives early in 1939, and in my opinion every physician should be especially proud of his national organization for its foresight in helping to create this Service.

By now, every physician should have a clear understanding of what the Procurement and Assignment Service is and does; but misunderstandings still exist. Recent experience has convinced me that many busy practitioners, who have erroneously felt that they themselves were not personally concerned, have failed to follow its development and progress through their medical journals. Others, knowing they *were* personally concerned, and resentful of even polite inquiry into their possible relationship to military service, have cussed rather than discussed the Service and have failed to understand its workings. Therefore, I shall give you first a brief outline of its history.

Such an outline logically begins with the reasons which convinced civilian and military leaders that a Procurement and Assignment Service was needed. May I cite Colorado examples (1917-1918) of those reasons? In one of our towns of about 12,000 population all of the doctors except two were of military age when the United States entered the first World War. All were patriotic and enthusiastic in their desire to serve the country. All but the two older men volunteered and were commissioned in the Army Medical Corps. When the 1918 influenza became epidemic, the town of 12,000 found itself with only two elderly doctors, one of whom was himself a flu victim. That was a sample of improper procurement of medical officers for the Army.

Also in 1917, two Denver physicians in their early forties, one an outstanding dermatologist and the other an outstanding otolaryngologist, volunteered at about the same time and were commissioned. The dermatologist was assigned to Honolulu as a sanitary inspector, and the otolaryngologist was assigned near Seattle in charge of a dermatological ward. That certainly was an example of improper assignment.

Such examples were multiplied on a national scale. The American Medical Association realized this, and when war began in Europe in 1939 the American Medical Association began a study of Medical Preparedness. It is worthy of special note that the American Medical Association was the first national organization of consequence in any profession or business field to foresee the need for rapid and efficient organization against the possibility of war. The Committee on Medical Preparedness, headed by Doctor Irvin Abell, was created in June, 1940, and at once began doing a monumental job. It surveyed the medical needs and medical facilities of the whole nation, by counties. It also conducted the now-famous A.M.A. questionnaire-census of the entire medical profession of the United States and its possessions. The American Medical Association did this at its own expense. All of you are familiar with it because all of you received those questionnaires and all of you have had an opportunity to read of its results. The Committee studied also the possibilities of creating a government-authorized Procurement and Assignment Service.

In 1941, the American Medical Association House of Delegates passed a strong resolution urging that the Government establish the Procurement and Assignment Service. This resolution, resulting as it did from the scientifically accumulated facts of previous A. M. A. surveys, was approved by the National Research Council and other government agencies, and on October 30, President Roosevelt signed an executive order under his emergency powers creating this agency. That was only five weeks before Pearl Harbor. Unfortunately there then existed no government budget or other available funds with which to set the agency in actual operation. In spite of lack of funds, Chairman Frank Lahey and the remainder of the Directing Board of the Procurement and Assignment Service, and the Executive Officer of the Service, Lt. Col. Sam F. Seeley, who had been detached from the regular Medical Corps of the Army for this purpose, accomplished the necessary preliminary organization rapidly, mostly with personnel and office equipment temporarily borrowed from other governmental agencies.

At the time of its creation, the Procurement and Assignment Service was expected to have from eighteen months to two years to do what was predicted would be a comparatively simple job. Then, as we all know, came December 7, and Pearl Harbor. The expansion program of both the Army and Navy of necessity had to be jumped from a slow and orderly process into a speed process which has been kept as orderly as possible but which naturally has developed some bottlenecks and some confusion which is bound to accompany any such rapid expansion. The magnitude of the task is sufficient explanation of any confusion that has existed.

ORGANIZATION

The Procurement and Assignment Service plan of organization is on a National, Corps Area, and State basis. Its central office in Washington, D. C., and its general policies are controlled by the Directing Board consisting of Doctor Lahey as Chairman, Doctor James E. Paullin of Atlanta, now

*Read at the National Assembly of the International College of Surgeons, Denver, July 15, 1942.

President-Elect of the American Medical Association, Doctor Harold S. Diehl of Minneapolis, Doctor Harvey B. Stone of Baltimore, all of whom as you know are high in the councils of the American Medical Association, and Doctor C. Willard Camalier, who represents the American Dental Association. Its central office staff, now including liaison officers from the Surgeons General of both Army and Navy, several assistants, and a clerical staff of some sixty is directed by Colonel Seeley. The central office in Washington, and, for that matter, all of the lower divisions of the Service, are served also by the Procurement and Assignment Consultant Office in Chicago, which office is the headquarters office of the American Medical Association, with its truly stupendous files of information about every physician in the nation. Each of the nine Corps Areas has a committee exercising general supervision over the states within its area and acting as an appeal body should any person disagree with the decisions of a State Committee. Each state has a Procurement and Assignment Service Committee for physicians, one for dentists, and one for veterinarians. The Committee for physicians in each state may in its own judgment, as needs may dictate, create district and county advisory committees. There is a large group of national advisory committees to assist the central office in Washington and all branches of the service in special fields.

ACTIVITIES

At the present time the activities of the Procurement and Assignment Service should be thought of as in two categories: authority and advice. The authority of the Service over physicians at the present time is limited to the matter of determining whether a physician is available for military service or is not available for military service by reason of the essential character of his present civilian work. The advisory activities of the Service are really too numerous to mention, but the three most important are: advice and assistance to the armed forces concerning the legal, professional, and ethical qualifications of physicians who seek commissions in the Medical Corps, assistance to the armed forces in appropriate assignment of medical officers, and advice and assistance to industries and to communities which find themselves temporarily short of needed medical service. It may be possible that, in the future, when the shortage of physicians is felt more acutely, the Procurement and Assignment Service will be given added authorities, but at the present time it should be clearly understood that the service has no authority to compel a physician to join the armed forces, to make him change his location, or, for that matter, to make him do anything.

May I quote from the original order of Mr. Paul V. McNutt, which, when approved by President Roosevelt, actually created the Procurement and Assignment Service?

"The functions of the agency would be (1) to receive from various governmental and other agencies requests for medical, dental and veterinary personnel, (2) to secure and maintain lists of professional personnel available, showing detailed qualifications of such personnel, and (3) to utilize all suitable means to stimulate voluntary enrolment, having due regard for the over-all public health needs of the nation, including those of governmental agencies and civilian institutions." Basically, then, its only authority over a doctor is to prevent one of the military arms from accepting him, by declaring him essential in his civilian activity. The Army, Navy, and Public Health Service have joined in recognizing that authority of the Procurement and Assignment Service, their Surgeons General agreeing that they will not commission a medical man whom the Procurement and Assignment Service declares to be essential in his current civilian activity.

At first the Procurement and Assignment Service was a sub-division of the office of Defense, Health and Welfare Service, but on April 18 it was transferred to the War Man Power Commission, was given a real budget, and a real clerical staff.

Supplementing the survey made by the American Medical Association in 1940, the Procurement and Assignment Service sent out its own even more elaborate questionnaires in April of this year. This time the questionnaires went not only to doctors of medicine but to dentists and veterinarians. At last count close to 150,000 of these questionnaires had been returned as requested to the National Roster of Scientific and Specialized Personnel in Washington, and had been coded and entered on the mechanical punch card system so that the Procurement and Assignment Service central office in Washington now can obtain, on short notice, completely detailed and scientific information about all of these professional men.

Let us suppose that the Surgeon General of the Army requests the Procurement and Assignment Service to obtain one hundred orthopedic surgeons, all between the ages of thirty-five and forty-five, each capable of becoming chief of an orthopedic service for an army hospital, all of them United States citizens, graduates of Class A medical schools, having served acceptable internships, having limited their practice to orthopedic surgery for five years or more, etc. Add any other special qualifications limiting the choice that you may desire or imagine. The Procurement and Assignment Service simply makes out a schedule of these qualifications and at the National Roster they run the punch cards through a machine. The appropriate buttons indicating each of these qualifications are pushed down on the machine, and additional buttons are operated so that the machine will pass only the cards of those men who have indicated the army as their first or second choice in their April Procurement and Assignment questionnaires. Within a few hours the machine will have processed the cards for every doctor of medicine in the United States and it will have turned out a typewritten list of only those men who meet the desired qualifications, with a detailed code statement of the qualifications of each man, with all their names and addresses, broken down by states and even by cities if desired. The Procurement and Assignment Service takes this list and, within the same day, what are known as clearance forms for each name are started out toward the State Procurement and Assignment Committees to determine whether or not these men are available as of that date for military service. Shortly these forms will have been returned to the Procurement and Assignment Service and the men who are considered available for military service will then receive an invitation to apply for commission.

What I have just described is the ideal operation of Procurement and Assignment Service. Pearl

Harbor and its implications necessitated a speed-up which in turn has necessitated a somewhat less ideal operation concerning younger physicians of the country but which none the less is working smoothly. It became apparent in early spring that a grave shortage of physicians existed in view of the tremendous expansion of the armed forces. In many states young men, rather than volunteering their services, were evidently waiting to be officially told that their services were needed at once. Chairman McNutt of the War Man Power Commission has pointed out that whereas in the first World War twelve thousand physicians volunteered in the first six months of the war, only three thousand volunteered in the first six months of this second World War. This is only partly the fault of the profession. It may be in part the fault of governmental publicity, through which many physicians gained the impression that the Procurement and Assignment Service would notify them when voluntary enlistment was needed. Yet it was physically impossible for Procurement and Assignment Service to send such an official invitation to individuals with the needed rapidity, if at the same time we were to avoid the mistakes of 1917-1918. It also was in part the fault of circumstances in that the Surgeon Generals' offices in Washington were desperately short of trained clerical personnel to handle the applications that were being received. It was to some extent the fault of army regulations which had established such high standards of physical fitness that many physician volunteers were being rejected for only minor defects. This in itself kept many good men out of uniform, and tended to discourage other physicians from applying.

As soon as these facts were recognized corrective measures were instituted. First on January 30, and again on April 23, the Surgeon General of the Army eased the regulations regarding physical examinations. This made it possible for the Army to accept for limited service physicians with minor physical defects, and some with what are generally considered major defects, but which are mechanical rather than organic, and which are stationary in character, and not likely to be aggravated by military service. Then in May, to break the tremendous bottleneck of clerical work in the Surgeon General's office, what are known as Army Medical Officer Recruiting Boards were established in each state to work hand-in-glove with the Procurement and Assignment Service Committee of each state. Whereas formerly the process of obtaining a commission in the medical corps of the army consumed several weeks or even months, the whole process can usually now be carried out in a matter of a few days by these specially empowered recruiting boards.

Unfortunately at least one bottleneck in this program still exists in Washington, and whether it is in the Surgeon General's Office or the Adjutant General's Office of the Army, I am unable to say. However, the fact remains that the Recruiting Boards now are commissioning new medical officers at such a rapid rate that these newly commissioned officers frequently do not receive their orders to active duty for a month or six weeks after they have been sworn into the Army. Similar problems seem to worry the Navy Department, the Naval District offices apparently being able to process applications faster than Naval Offices in Washington can complete them.

The same Procurement and Assignment procedure with the exception of individual State Recruiting Boards, applies to selecting and commissioning new medical officers for the Navy. However, the Navy has not lowered its physical standards to any great extent, for perhaps obvious reasons. The Navy has on hand almost as many applications for commission as it has vacancies to fill for the next few months. Although the Navy shortage is not acute to date and the Navy has adopted no particular speed-up plan to my knowledge, physicians are still needed because of the earlier, rapid expansion, and the further expansion of Navy personnel to be expected as the new ships are commissioned.

The shortage of physicians which has been so frequently mentioned is not well understood. We all know that the country seemed to have no shortage of physicians but rather the opposite in the peace-time 30's. Why, therefore, is there a shortage now? Likewise the question is frequently asked of us: "Why do Army hospitals have such huge bed capacity compared with the military population housed in their camps?" If one sentence can sum the situation up it is this: In the Army, medical care is compulsory and there is no such thing as an ambulatory illness. A bad head cold is hospitalized. Vaccination and immunization procedures are compulsory. Periodic examinations are compulsory and frequent. The man who in civilian life might continue work at his office, or stay at home for a day or two if he feels "under the weather," is in the Army given immediate medical care and hospitalization. He is not allowed to roam the post at will or remain in barracks and aggravate his minor injury or give his sore throat to a hundred other soldiers. And all of this is exclusive of the question of battle casualties, the possibility of which requires a reserve pool of trained medical officers, ready to serve in combat zones. It is difficult for civilian practitioners to understand this situation, and they often feel that the Medical Corps is overstaffed to an extent that medical officers have little medical work to do. As a matter of fact, it is highly important for new military physicians to be thoroughly familiar with military and medical-military routine long before they are sent into the field.

Application of these principles has resulted in the present tables of organization of the Army, whereby it takes from six to nine times as many physicians to serve a given unit of military population as it would to serve the same number of persons in civilian population. In round numbers, there was approximately one physician to each eight hundred civilian population in the United States in peace time, but the Army has required as high as 10 per thousand, and the Navy as high as 6.7 per thousand. The average of these rates for the services is now 6.5 per thousand. If one to eight hundred should be considered satisfactory or ideal for civilian population, then our civilian population cannot expect medical care as usual, any more than the country can consider business as usual in war time. Under present estimates Procurement and Assignment Service believes that it can leave one physician to each fifteen hundred of civilian population and still supply the Army and Navy with all of the doctors needed. This one to fifteen hundred is, however, only a very rough and tempora- estimate.

Should the armed forces undertake even greater expansion than is now contemplated, it is possible that our civilian ratio will have to be reduced until it is one doctor to two thousand population. We believe that it is the outside limit, beyond which the Armed forces cannot deplete the civilian medical profession without gravely endangering the health of the nation and thus equally endangering war production and the war effort as a whole. If that limit should be reached the armed forces will simply be forced to revise their tables of organization and reduce the rates of Medical Corps personnel to over-all military personnel, below the present 6.5 per thousand. We know that scientific studies in preparation against such a contingency are already well under way.

To find out where in the country the shortage is acute, a survey was made within the last two months by the Procurement and Assignment Service, the American Medical Association, and the other agencies concerned. Basing the survey on the figure of one physician per fifteen hundred of civilian population, rough rule-of-the-thumb quotas were devised to find out what states and communities had already supplied as many physicians to the armed forces as they could afford to supply and what others "owed" more doctors. It was found that several states, including most of the southern states, should supply no more physicians to the armed forces except as young physicians could be specifically spared from the larger cities. These states were, as of June 15, alphabetically, Alabama, Arizona, Delaware, Idaho, Louisiana, Mississippi, Montana, Nevada, New Mexico, North Dakota, South Carolina, South Dakota, Utah, Vermont, Virginia, and Wyoming. By the same survey it was found that eight heavily populated states were distinctly in arrears in their medical corps enlistments and these eight states should supply about three-fourths of the physicians who will be needed by the armed forces between June 15 and December 31. These eight states, in the order of their delinquency, were: New York, Illinois, California, Pennsylvania, Massachusetts, New Jersey, Michigan, and Ohio. In round figures there were twenty thousand medical officers in the armed forces on June 15 and between that date and December 31, the armed forces must find twenty-two thousand more. Other states, not mentioned in these two contrasting lists, were progressing normally with their recruiting and if they continue at the recent rate will have filled their quotas within the time. As Mr. McNutt said, the acute problem for the last half of 1942 in states which had already filled or passed their quotas, is to provide an equitable distribution of medical services within their borders. If their more sparsely populated areas are adequately served and their urban communities readjusted and the necessity does arise for additional quotas from these states, urban physicians can be made available for military service. The Medical Officer Recruiting Boards are being withdrawn from those states which have reached or passed their quotas.

In some states which are having trouble encouraging voluntary enlistment of physicians for the armed forces, the Selective Service System has recently stepped prominently into the picture. Almost all physicians have dependents, even those in the youngest age group. Almost all physicians therefore were until recently in Class 3A under Selective Service, being deferred on account of dependents. About the first of May it became apparent that the shortage would not be met if this deferment were continued. We all know that deferment from military service on account of dependency was designed because of the fact that the men drafted as privates received only twenty-one dollars per month, more recently fifty dollars. A memorandum from General Hershey, National Director of Selective Service, was then sent to all local draft boards, to clarify this policy regarding doctors. The memorandum pointed out that any physician entering the military service is of course entering at a minimum grade of First Lieutenant and that if he has dependents his minimum pay and allowances in that grade would be $3,152.00 per year. The memorandum closed with significant phrases advising the local draft boards that in virtually all cases the pay and allowances available to a commissioned officer would eliminate the question of dependency when classifying a physician, dentist, or veterinarian. A doctor accustomed to an annual income in five figures cannot support his family "on the scale to which it has become accustomed" on the salary of First Lieutenant. It is equally true, however, that any doctor's family, with perhaps a few very rare exceptions in the whole country, can live, without suffering, on the salary of an Army Officer. And finally he must face another fact: that should we lose this war for lack of medical care of our soldiers, the doctor's family accustomed to a five figure income might find it necessary to live on two bowls of rice a day.

Selective Service has, therefore, started reviewing the classification of all doctors of military age, and in many states Selective Service itself is making official inquiry of the Procurement and Assignment Service to determine whether such physicians are or are not available for military service. Where Procurement and Assignment Service thinks such physicians are essential in their civilian activity, Selective Service is deferring them. When Procurement and Assignment Service says they are available, Selective Service is in turn notified and is asked to consider the possible reclassification of such physicians. Many of them are even placed in Class 1A in spite of dependents, and Selective Service can thus virtually compel physicians to seek commissions or run the risk of being inducted as privates when their draft numbers come up.

In this connection it should be remembered that the medical profession and the clergy are the only groups of the population who by the mere fact of their professional standing are favored by immediate admission to the status of a commissioned officer.

As Colonel Seeley has said on more than one occasion, the Selective Service System is the "dog catcher" in this program, and Procurement and Assignment Service is the "humane society!" Putting it more seriously, the Congress of the United States has, through the Selective Service Laws, stated very definitely that every male citizen under forty-five years of age is liable to military service, unless he himself can prove to the Government that his civilian activity is essential to the war effort or that the fundamental needs of dependents are sufficient to relieve him from military service. Procurement and Assignment Service modifies this through its authority to stay the hand of either Selective Service or the Surgeon General

when the medical needs of the civilian population justify that action.

The doctor more than forty-five years of age is not, under present laws, liable to military service, though some physicians between the ages of forty-six and fifty-four may obtain commissions in the Army if vacancies suitable to them exist. The same applies in the Navy except that the top age limit is fifty. In general, however, the physician over forty-five should remember that modern war is a young man's game, that it is just as important to "keep 'em well" on the home production lines as to "keep 'em flying" on the battle lines. If all the doctors of the United States joined the armed forces, production in all its phases would falter, an epidemic could sweep the country and soon the armed forces would have no more replacements of either men or materials. These facts are so plain that they should be almost axiomatic, yet time and again we find the doctors who are fifty, sixty, seventy, and, yes, even eighty, literally begging for an opportunity to go to the battle zones and man an evacuation hospital.

It is up to them, even those of the older age levels who have retired to enjoy their life savings, to help win this war by working harder than ever before, or by returning from retirement, on the home front. There are places for them in industrial medicine, in the all-important field of medical teaching, in civilian defense activities, and in common every-day urban and rural medical practice—places that someone must fill. They, these older men who would honestly prefer to pack a .45 while attending a front-line clearing station and take an occasional pot shot over the line at a Jap—some of them are in this audience—they, and some of you, must accept as your job for the duration the medical care of the home front. At the same time, the older men should persuade the occasional laggard among the younger and more vigorous physicians that his place is with the armed forces if he is physically fit.

The Procurement and Assignment Service is a national and a local team, and is itself a member of a still larger team, the all-out American team. Our part of that team work, as I see it, is to help guide the profession by which I am proud to be employed so that its young and vigorous members will keep 'em flying and keep 'em fighting and so that its older or incapacitated members will keep 'em producing and keep 'em harvesting.

NEWS ITEMS

The Committee on Scientific Research of the **American Medical Association** has made the following grants: Barnett Sure, University of Arkansas, vitamin B complex; Paul Thomas Young, University of Illinois, appetite and food preferences in the rat; Deborah V. Dauber, Michael Reese Hospital, Chicago, atherosclerosis in the chick (Jay Conger Davis Research Fund); Milton Mendlowitz, Mount Sinai Hospital, New York, digital circulation (Jay Conger Davis Research Fund); Jacob Rabinovitch, Jewish Hospital of Brooklyn, effect of heparin on thrombosis; and Robert W. Virtue, University of Denver, sulfur metabolism in cystinuric dogs.

Dr. J. B. Collip, head of the department of biochemistry of McGill University, was elected on May 30 to succeed Judge F. W. Howat, of New Westminster, B. C., as president of the Royal Society of Canada.

Dr. Samuel W. Lambert, formerly professor of clinical medicine and dean of the College of Physicians and Surgeons of Columbia University, died on February 9 at the age of eighty-two years.

Dr. Maximilian J. Hubeny, of Chicago, director of the x-ray department of the Cook County Hospital, died on July 2, at the age of sixty-one years.

The honorary degree of doctor of science was conferred at the one hundred and seventeenth annual commencement of Jefferson College, Philadelphia, on **Harris Peyton Mosher,** emeritus professor of laryngology and otology of the Harvard Medical School.

The Duddell Medal of the Physical Society, London, which was awarded to **Dr. William David Coolidge** in recognition of his pioneer work in the production of ductile tungsten and of his invention and the subsequent development of the hot-cathode high-vacuum x-ray tube, was formerly presented to him on May 1 by Viscount Halifax, British Ambassador to the United States, at a dinner of the American Physical Society at Baltimore.

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Book Reviews

Surgery of the Ambulatory Patient, L. Kraeer Ferguson, A.B., M.D., F.A.C.S., Lt. Com. Medical Corps, U. S. Naval Reserve, Assistant Professor Surgery, University of Pennsylvania, etc. With a section on Fractures, by Louis Kaplan, A.B., M.D., F.A.C.S., Associate in Surgery, University of Pennsylvania, xvi, 923p., 645 fig. $10. J. B. Lippincott Co., Philadelphia, 1942.

THIS book covers material which has been presented in previous writings under the poor name of "minor surgery." A rather interesting innovation noted is that by use of a body chart on the inside front cover important subjects are correlated with the page numbers on which discussion begins; a plate of the skeletal system, similarly keyed, is presented on the facing page. The section on Fractures written by Louis Kaplan has been very well done. An excellent chapter on local anesthesia appears on pages 18-54 inclusive. Some of the conditions discussed by the author might seem a little drastic to be treated in an ambulatory patient: for example, retromammary abscess, ischio-rectal abscess, etc. Fig. 420, page 645, is titled "Technic of Ligating the Femoral Vein." The reviewer wonders if this is not a misprint and if the author did not mean the saphenous vein. All in all, the book is excellent, well presented, and can be warmly recommended to surgeons, both young and of mature experience.

P. T.

Vaginal Hysterectomy, James W. Kennedy, M.D., F.A.C.S., Surgeon-in-Chief, Joseph Price Hospital, Philadelphia, etc., and Archibald D. Campbell, M.D.C.M., F.R.C.S., (C), F.R.C.O.G., F.A.C.S., Assistant Professor Obstetrics and Gynecology, McGill University, Montreal, etc., xviii, 495p., 120 pl. $10. F. A. Davis Co., Philadelphia, 1942.

THIS work was written from experience and not by proxy. It is brimful of worthwhile information. It is timely, since in the decades just passed, surgeons have drifted from removing the uterus by the vaginal route and have concentrated on technical refinements of hysterectomy via the abdomen. The illuminating chapter on the history of vaginal hysterectomy is a worthwhile document in itself. Dr. Kennedy justly argues that since there is of necessity considerable mortality following abdominal hysterectomy, and since the removal of the uterus via the vagina reduces the mortality to practically nothing, this should be a potent factor to induce surgeons to swing along with the pendulum in favor of vaginal hysterectomy. Also, the very important factor that carcinoma of the cervix is frequently found in neglected and advanced stages makes it important to always remember that from a prophylactic point of view a sterile, nonfunctioning uterus is by far better removed than left to form a potential carcinoma-bearing, useless organ. This is sound reasoning, and should be unreservedly heeded. The author bases his succinct deductions upon 60 years of experience in thousands of cases in which hysterectomies were performed for a great variety of conditions. He illuminatingly urges surgeons to think for themselves and aptly states "A man prostitutes his morality when he permits others to think for him and excessive standardization too often kills initiative and stifles progress. The moment we become victims of servitude then the death warrant of the advanced thinker has been signed. Science recognizes no aristocratic intellect or preconceived opinions or ideas in medical and surgical thought. Progress will never come from neutralizing the minds of men." Thus, in the same vein, throughout the work sound philosophic interspersions stripped of theorization are found. This work is classic. It is not written by proxy. This reviewer has been inspired by the soundness of the reasoning and feels that following its precepts will save many lives and tend toward better surgery. Arguments pro and con unreservedly yield in favor of the vaginal approach. The technical details of vaginal hysterectomy are described in a masterly manner. One is stimulated and inspired by following this excellent text, and the operations readily mastered when thus guided. Dr. Kennedy stresses that 95 per cent of uterine malignancies could be prevented by earlier attention. Particularly is this true in the first and second stages of carcinoma of the uterus. It seems to this reviewer that the extensive dissections necessitated by the Wertheim procedure or some of its modifications do not materially advance the elimination of affected nodes when one is inclined to agree with Dr. Kennedy that massive necrosis of the tissues of the broad ligament which results from clamping yields equally as good or even better results than those following the more extended and dangerous procedure. The heartening low mortality of vaginal hysterectomy is alluring and the freedom from postoperative complications striking. Just credit is given to radium and x-ray. Dr. Kennedy has obviously the refreshing fairness of being broad in his interpretations. He voices a sincere criticism when he admonishes that the death rate from malignancy of the uterus "at this state is a reprehensible example of a surgical anachronism." His conclusions are fortified by a wealth of material. Dr. Archibald Campbell supplies a good chapter on hysterectomy by the ligature method. All in all, this splendid volume should unreservedly be in the library of every medical student, general surgeon, and specialist. It is one of the outstanding contributions to the subject of our time. The illustrations are excellent, the index thorough, and the printing and binding of equally fine quality.

Max Thorek

Surgical Physiology, Joseph Nash, M.D., Assistant Professor of Clinical Surgery, New York University College of Medicine, etc., xxii, 496p. 16 fig. $6. Charles C. Thomas, Springfield, Ill., 1942.

THIS work is well planned and well written. It is a difficult task for the clinician, especially the surgeon, to wade through the average text book on general physiology. Dr. Nash has presented subjects pertaining to surgery in such a way that the function of the respective organ operated upon is kept in sight during the operative procedure. The section dealing with Liver and Gall-

bladder is especially well written. A few explanatory diagrams and illustrations would have added much to the excellent text. It is an excellent book and can be recommended not only to the surgeon but to anyone interested in physiology and its relation to morbid conditions.

P. T.

Morris' Human Anatomy, 10th ed., edited by J. Parsons Schaeffer, A.M., M.D., Ph.D., Sc.D., Professor of Anatomy and Director Daniel Baugh Institute of Anatomy, Jefferson Medical College, xi, 1635p., 1155 fig. $12. The Blakiston Co., Philadelphia, 1942.

THIS tenth edition not only lives up to its predecessors but surpasses them. Its 1635 pages (including index) meet every demand of a thorough work of anatomy. The subject matter is presented in a most complete fashion. Physiology has been cemented in its relation to anatomy. This is an important factor. Developmental anatomy finds a prominent place in Section 1, and is referred to time and again throughout the book. The Anglicized BNA nomenclature has been followed. However, references to other nomenclatures have not been neglected. Section 7, dealing with the Nervous System, has been especially well handled. It is refreshing to pick up this didactic, time-honored text book of anatomy and find that it embraces clinical examples as a means of emphasizing points. This is adhered to throughout the text. The book has been a standard and will continue to be that for a long time to come. It is well printed and bound, and the illustrations are satisfactory.

P. T.

Approved Laboratory Technic, John A. Kolmer and Fred Boerner. Second edition, XXVII, 921p. 380fig. $8. D. Appleton-Century Co., Inc., New York, 1941.

In the preface to their first edition ten years ago, the authors stated that they hoped this manual would aid in establishing standards for the performance of various laboratory examinations. This hope was certainly fulfilled. In their second edition (1938), many revisions were made, and in the present edition many of the new and approved methods are included. The present edition is a third again as large as the first edition. This addition of some three hundred pages signifies the advance clinical pathology has made in the past decade. The methods for the determination of sulfanilamide, sulfapyridine and sulfathiazole have been included. Other sulfonamide compounds are not mentioned, since they were not generally established at the time of publication. Among the new and approved methods included in the present edition may be mentioned those of Sparkman for the determination of urobilinogen in the urine and feces as a test for liver function as well as the estimation of hippuric acid in the urine for the same purpose; Cherry & Crandall's method for the determination of serum lipase in relation to disease of the pancreas; methods for the determination of vitamin C in the urine and plasma; the method of Quick for quantitative determination of prothrombin. A notable lack in the laboratory texts has been the absence of a method for semen examination. An adequate method is here described. Perhaps the method for determination of thiocyanates in the blood will be deleted in future editions, since its therapeutic efficacy is becoming more questionable.

Illustrations, as in the previous editions, are numerous and very good.

This book is attractively bound and forms a worthwhile reference and practical manual for the medical laboratory. It is also recommended for the internist and surgeon.

B. H. Neiman

Cirugia especializada, Alejandro J. Pavlovsky, *and* **Atlas de histero-salpingografia,** Segunda Edicion, en colaboracion con el Profesor Humberto H. Carelli. 180p. Illus. Editor "El Ateneo," Buenos Aires, 1941.

This work opens with an able presentation of the treatment of vaginal fistula. The second chapter, equally illuminating and thorough, deals with the reconstruction of the urethra. The third chapter describes the methods of treatment of the prolapsed uterus. This is followed by a chapter dealing with inflammatory conditions of Douglas's Pouch, the so-called uterine hydrocele of Pawlik. The final portion of the work presents an atlas of hysterosalpingography, written in collaboration with Prof. Humberto H. Carelli. This section comprises a description of case histories augmented by x-ray studies of technic, and results of hysterosalpingography. The combination of articles in this work is refreshing and well-handled, and should be of interest to the student, general surgeon and specialist. The index is thorough; the illustrations excellent. The work is a distinct contribution to the advancement of surgical endeavor.

Urology in War: Wounds and other emergencies of the genito-urinary organs, surgical and medical. Charles Y. Bidgood, Lt. Comdr. (MC) U.S.N.R. 75 pp. 27 fig. $2. Williams and Wilkins Company, Baltimore, 1942.

THIS little volume deals with acute traumatic and inflammatory lesions of the genito-urinary tract, in war. It has been designed especially for medical officers in the field, aboard ship, or in isolated outposts who are not themselves specialists in urology but who may be called upon to cope with such emergencies. In addition to the main subjects, a few miscellaneous but relevant conditions are considered. The author has done a commendable piece of work in the condensation of so much material in such a small volume. The subjects are dealt with concisely yet thoroughly, and nothing is left to the imagination. The physician in civilian practice confronted with the emergencies of bombing and other implements of war on civilians, will also do well to have this book and know what it teaches. With such a fine example of book manufacture by the publishers, it is to be regretted that they permitted a number of typographical errors to mar such excellence; to name a few, "Colle's fascia," "Urothopin," and the use of the German form "Neosalvarsan." One does not expect such errors in books from the Waverly Press. But, as the French used to say, "c'est la guerre." It's a mighty good book just the same.

A. L. Wolbarst.

Cineplastic Operations on Stumps of the Upper Extremity. Rudolf Nissen, M.D., and Ernst Bergmann, M.D. 88 pp. 96 fig. (18 col.) $3.75. Grune

tions of the forearm stump. Here the stump is described and the Krukenberg operation and other methods of phalangization are given. The bibliography is thorough and up to date. All in all, this meritorious contribution to contemporary surgical literature deserves a warm reception by the surgical profession which this reviewer feels confident will be forthcoming.

M. T.

War Gases. Their Identification and Decontamination. Morris B. Jacobs, Ph.D., Food, Drug and Insecticide Admin., U.S. Dept. of Agr. 1927, Chemist Department of Health, City of New York, 1928. Formerly, Lt. U.S. Chemical Warfare Service Reserve, xiii, 180 pp. 8 fig. $3. Interscience Publishers, Inc., New York, 1942.

THIS short but fairly complete monograph discusses the more important gases used in chemical warfare. The method of presentation is such that one obtains a good composite picture of this specialized field. Although the Geneva General Gas Protocol of 1925, which most countries of Europe signed, forbids the use of poison gas in war, the risk of the use of poison gas remains a strong possibility. The author reviews and discusses at length the more popular gases as mustard gas and Lewisite, since these were a great hazard to the enemy in World War I. Various classifications are mentioned and the Prentiss classification is especially used. The chapters on the effect of war gases on materials, water and food and on decontamination are especially significant for civilian defense. The reviewer is of the opinion that this monograph is of special value to the chemical officer both in the theater of war and civilian defense.

B. H. Neiman.

Medical Leaves. Volume IV. Hershel Meyer, Editor. 223p. Illus. Medical Leaves, Inc., Chicago, 1941.

THIS volume comprises a group of twenty-five well written and instructive articles by various authors. It is replete with important contributions, among which may be mentioned those of Drs. Bernard Zondek and Felix Sulman "On the Antigonadotrobic Factor," and Dr. Reuben L. Kahn "The Verification Test in the Serology of Syphilis." There are many fine articles on the history of medicine, including "Physicians in Jewish Folklore," by A. A. Roback, and "Dr. Elie De Cyon," by Dr. Solomon R. Kagan. Several excellent papers on the sociologic aspects of the practice of medicine will prove of very general interest. This is a fine volume and should find its way into every medical library.

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